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A CASE OF SUCCESSFUL OPERATION FOR LARYNGISMUS PARALYTICUS.

BY R. PRINGLE, M.R.C.V.S., ROYAL SCOTS GREYS, DUNDALK.

THE following is a short history of a troop-horse, B. 36, of the Royal Scots Greys, the horse having been operated on some time ago for Roaring, according to Dr. Fleming's method.

I would beg to point out that I had nothing whatever to do with the operation, or even the after-treatment of the horse. In March last, the horse was selected by me as being one well suited for the operation; in other words, he was a nice young troop-horse, but so affected with the complaint that it distinctly stopped him in anything like fast work. In compliance with orders received, I sent the horse to Newbridge, where, I believe, he was operated on by Veterinary-Surgeon Kay Lees, on March the 16th. On the 31st of May following, he returned to the regiment by route-march, convalescent, but not fit for duty. When he returned there was little or no trace of the operation, and the horse looked bright and well, though a little thin. I had him placed in a comfortable box, put him on full feed, and sent him to walking exercise for one hour daily.

I continued this treatment for about three weeks, at the end of which time I had the exercise increased to two hours daily, and then discharged him as fit for duty on July the 15th. He returned to his troop, and with it went through all the regular duties, such as drills, field-days, etc., which at this time, I may mention, were pretty severe. About the middle of November, I had the horse examined and tried. I found him very much reduced in condition, and showing distinct traces of the hard work he had

gone through; in a fairly fast gallop he became fatigued, though he made very little noise. He was somewhat slow in regaining his breath completely. This was so entirely contrary to former trials I had made of the horse, that I put it down altogether to the debilitated state the animal was in.

I put him on the sick list, placed him on liberal diet, and sent him to exercise varying from one to three hours daily.

A few days ago I had the horse brought out for trial, as I considered him fit and well. The trial took place under the following conditions: On a circular course about three-quarters of a mile in circumference, ground rather heavy and holding. I put a soldier, weighing thirteen stone on the horse's back, and sent the animal a mile-and-a-half at his best pace, at the end of which he was completely blown, but making very little noise. In four minutes I considered him recovered and fit to proceed. I then, under exactly the same conditions, sent him three miles, a distance which he covered in twelve minutes. He made no more noise in the last half mile than he did in the first, and pulled up fresh and quite fit to go on a great deal further. I consider this case is fairly entitled to be considered a success, and feel sure its publication will interest some of the readers of the VETERINARY JOURNAL.

THE CURE OF ROARING BY OPERATION ON THE LARYNX.

IN the issue of the VETERINARY JOURNAL for last month, in an Editorial *addendum* to Mr. Burke's paper on the "Operation for the Cure of Roaring," two illustrative instances of beneficial results were given, and one of these was the case of a valuable hunter belonging to the Duke of Westminster, the recovery of which was reported by his secretary, Colonel Scotland. Unsolicited, his Grace has forwarded the following additional reference to this case, and the reliability and value of his testimony no one who knows him will be disposed to deny. It adds another incontrovertible proof to the many that horses can live and perform their work satisfactorily after "ablation" of an arytænoid cartilage.

Eaton, *January 1st*, 1890.

Dear Dr. Fleming,—I must write and give you an account of the horse you were good enough to operate upon last spring for "Roaring." I turned him out at grass in the summer and had him up late; began to ride him about ten days ago. He makes very little noise, but has a cough of no severe character. On

Monday last, December 30th, I rode him with hounds; we had a gallop of fifteen minutes, with jumping, and he went as well as ever. I could not hear any noise, nor did he cough, except a little while riding home, and he galloped and jumped freely and well. So that in his case the operation must be considered as decidedly successful. Last year at this time he made so much noise that it was quite disagreeable to canter him over a field, and he would have been useless now. Thanks to your treatment, I have now a good *restored* horse, which is a great thing for me, as he is the pleasantest riding-horse and hunter I ever possessed.

Believe me to be, yours very truly,

WESTMINSTER.

GASTROTOMY.

BY E. T. LAWLEY YORKE, ONT. VET. COLLEGE, TORONTO.

DURING the past summer the following case came under my notice whilst with Mr. Wende, of Buffalo:—

A cross-bred, short-haired dog, weighing about 40 lbs., was brought to the barn by a boy, who was in great distress, the animal having swallowed a silver dollar; so he said.

I administered an emetic (tartar emetic, grs. iv). Vomition took place soon after, but no silver dollar came to sight; so I advised the boy to take his dog home and watch carefully, in case he passed it with his fæces.

Nearly six weeks afterwards, viz., on the 10th of June, the boy and dog reappeared, the latter looking as though he had undergone severe trials, being very much emaciated, and passing blood and mucus *per rectum*. The boy informed us that the animal had nearly lost its appetite, and what little food he would take was invariably ejected. This fact led us to suppose there might be something in the dollar theory, after all, of which we had at first been rather sceptical.

The animal being a great pet, and the boy most anxious to see something done to relieve its evident sufferings, we decided to operate on him and remove the coin, if possible.

Not thinking it necessary or advisable to diet the animal, it being then in low condition, we proceeded to operate.

The instruments used were a couple of ordinary dissecting scalpels with metal handles, a pair of scissors, and artery forceps; (3) three needles, two being threaded with ordinary carbolised gut of two different sizes, the third with ordinary strong cotton. The instruments were placed in a weak solution of carbolic acid (2 per cent.),

hands of the operator thoroughly scrubbed in hot water, then swilled in a weak solution of carbolic acid.

The attendant then put the dog on a small operating-table, used for spaying bitches, and an anæsthetic was administered (viz., sulph. ether). As soon as this had taken effect, the animal was turned on its back, the abdomen sponged and shaved with an ordinary razor, again sponged, and irrigated with a 1 to 1,000 per cent. of corrosive sublimate. An incision about $3\frac{1}{2}$ inches long was made through and parallel with the linea alba. The intestines were now exposed and carefully examined by manipulation, next the stomach; but no dollar was discovered so far. We were beginning to get disheartened, when something hard was felt about two inches in the duodenum, which proved to be the truant coin. After carefully working it back into the stomach, the latter was drawn out of the opening, exposing the greater curvature. An incision through it was made parallel with the blood supply, and the contents and dollar were squeezed out well over the side, to prevent any getting in amongst the intestines and causing irritation. The parts were then well irrigated, and about five stitches put in with the fine gut. They were again irrigated and returned, this time with a solution of boracic acid; the intestines thought to have come in contact with the hands were also sponged with the latter; the abdominal muscles were sutured with the stouter gut, and the common integument with the cotton.

The animal was laid near the open door, a small quantity of cold water being thrown over its head; it recovered in about ten minutes, and within half an hour after the operation it was able to go home. It vomited a small quantity of blood, but seemed otherwise all right. The boy and dog left for home, the former having instructions not to give the animal anything but water for twenty-four hours at least.

Five days afterwards the dog was brought back, still unable to digest his food. There were constant vomiting fits, so we prescribed 10 gr. doses of sub-nitrate of bismuth three times a day on an empty stomach, and to feed on Reid and Carnick's peptonised beef, and give 5 ♏ doses of tinc. of nux vomica three times a day after meals.

The dog continued to improve, and when I left Buffalo in September was as fat and sleek as a seal.

IMPETIGO.

BY R. W. BURKE, F.R.C.V.S., ARMY VETERINARY DEPARTMENT, ATHLONE, IRELAND.

Is there such a disease as Impetigo observed in horses? It is necessary to offer a few words of explanation respecting this question, because it is well known there was a great deal of confusion until quite recently with regard to this disease and Eczema. It is true that medical practitioners of the Vienna school hardly admit any form of Impetigo as distinct from Eczema; and among the only veterinary surgeons who have noticed the disease in England, so far as I can gather from its literature, are Professor Axe, of London, and Mr. Edgar. The former calls it "Ecthyma,"* and the latter suggests no nomenclature,† as he witnessed the disease along with Professor Axe. The distinction is, however, fully recognised by English, American, and most Continental writers.

In 1883 I witnessed this disease in a number of Artillery horses then under my veterinary charge, and termed it contagious Impetigo of the horse, a short account of which appeared in my Annual Veterinary Report of 1883, and afterwards in the VETERINARY JOURNAL of the following year, and the *Veterinarian* for October, 1886. The disease appearing in one or two horses of the above battery, then in camp near Benares, in India, spread rapidly, until nearly every horse in one subdivision was attacked. Its contagiousness was demonstrated by inoculation of a healthy horse, which developed the disease.

Some of the points in which the disease differs from Eczema and Ecthyma are—1. The causes of Impetigo are almost always local irritation and imperfect hygiene, of which we have a good example in the outbreak among the horses when in camp, and the skin of the legs was the first part to be attacked. 2. It appeared only in a subdivision of chestnut, thin-skinned horses, in which the eruption was very clearly visible. 3. I may mention also the peculiar character of the scab, which appears glued on to the part, and when shed leaves a bare, even patch, which heals without desquamation. 4. In the typical cases the eruptions are usually discrete, superficially seated, and seldom penetrate the subcutaneous connective tissue, except as a complication only. 5. The vesicles are pearly white at first, and contain a serosity, which may become purulent in the later stages, causing rupture of the walls and a glutinous discharge. 6. In exceptional cases of vesi-

* Chamber of Agriculture, 1879.
† Paper on "Some Contagious Skin Diseases of Horses," 1889.

cation in small groups, noticed in the outbreak, each vesicle remained distinct throughout its course, *i.e.*, did not run into each other, although closely watched, which is quite different from the first appearance of a patch of Eczema. 7. Whilst Eczema in most cases acknowledges a constitutional predisposition, and is somewhat troublesome to cure, this disease is purely local, and is quickly cured by simple dressings. 8. It is unattended with itching. In Eczema, on the other hand, pretty severe itching is always present. 9. This disease runs a more rapid course than Eczema. 10. It is easily inoculable, as experimentally shown in the outbreak abovementioned.

Friedberger and Fröhner,* who have described this disease under the name of *Dermatitis Pustulosa Contagiosa*, tell us that the older authors considered it identical with equine Variola. Contagious Impetigo in the horse runs its course in from two to three weeks—generally only two weeks in cases without complications—which is also unattended by any constitutional disorder, such as always appears in the course of general diseases, as in the Variolæ, etc. Unlike Variola, this is a purely local disease, unattended by fever, and amenable to local treatment.

So far as I can discover from the literature of the disease, I believe Schiudelka (*Oesterr. Vierteljahrsschr.*, 1883) was the first veterinarian who described Impetigo in the horse in the same year that my report of the Benares outbreak was submitted through the *Annual Veterinary Report*, dated April, 1883.

Finally, what is Ecthyma? We quote the definition of Ecthyma from one of the leading dermatologists of to-day, who says, "I know of no one definite *skin disease* that can well be called Ecthyma." An ecthymatous eruption accompanies Scabies, Phthiriasis, and other parasitic affections which bear no relation to each other whatever.

Again, Grawitz and Dieckerhoff (*Virchow's Archiv*, 1885, Bd. 102, p. 148) have described a disease under the name of Acne Contagiosa, which is believed to be due to a bacillus; but it is probably the "Varioliform Acne" of Bazin, which Bollinger and Neisser attribute to the presence of a parasite having the form of granular cells. Excellent histologists have considered these cells to be degenerated Malpighian cells. Special micro-organisms have also been described from time to time, as being related to Impetigo; but close observation has demonstrated them to be only the ordinary pyogenic or suppurative bacteria—the *Staphylococcus pyogenes aurens*. The definition of Acne has always been doubtful; but Acne, or Acme, as at present understood, is a disease quite distinct from Impetigo. An average case, if properly treated, is

* Lehrbuch der Spec. Pathol. u. Therapie der Hausthiere, vol. i., 1886.

cured in about four weeks, according to Dieckerhoft and Grawitz; but this is not the opinion of Friedberger, Fröhner, Schindelka, and myself, as an average case of equine Impetigo terminates generally only in two weeks. The worst cases were discharged from hospital, cured, within twenty-one days.

There are a number of skin diseases in the lower animals with regard to which the profession has not yet adopted a uniform nomenclature. It appears to us at the present time very confusing to speak of Eczema being the same disease as Impetigo, and then Ecthyma, and lastly Dermatitis Pustulosa Contagiosa and other names being suggested, when Impetigo is a recognised disease in scientific dermatology. The free interchange of medical and veterinary literature at the present day renders a uniform nomenclature in the highest degree desirable.

CONSTIPATION IN ELEPHANTS.

BY J. A. NUNN, F.R.C.V.S., F.R.G.S., ARMY VETERINARY DEPARTMENT, BARRACKPORE, INDIA.

THE following report may perhaps be of some professional interest to the readers of the VETERINARY JOURNAL :—

On the 25th November, at a late hour, I was hurriedly requested by the warrant officer in charge of the transport animals to visit their lines, as four of the elephants at this station had been seized with violent illness, and had been so for some time. On arrival, I found that two males and two females were suffering from colic, the males and one female being very ill indeed. The jemidar mahout had administered various remedies, the nature of which I am not Oriental scholar enough to comprehend; but as I found that all the animals were excessively constipated, and two had passed nothing for nearly twenty-four hours, I gave directions to administer, if possible, about half an ounce of croton seeds, and to have the animals walked about, so as to get the bowels to act. The night being dark and stormy, and the hour so late, I could do nothing more. The next morning, on my arrival at the transport lines, I found one elephant (a male) dead, and two others (a male and a female) in a very bad way indeed, and evidently suffering great pain. The drivers had been unable to administer any drug, and no fæces had been passed during the night by two of them, *i.e.*, for about thirty-six hours. In addition, there was much tympanites, the abdomen being blown up like a cow's. The animals had been walked about all night, but with no result; and not knowing what else to do, I resolved to attempt to administer an

enema with the station fire-engine, which was the only piece of apparatus I could think of that would throw sufficient water. I obtained the use of it—an ordinary manual engine, with a leather hose and a copper nozzle about 4 feet long. This was rigged up alongside a tank in the elephant lines, and the first animal—the remaining male—was brought up and tied to two trees, care being taken that the suction-pipe was clear of the bank and did not pump up any mud. I tried to administer the enema to the animal when he was lying down, but he would not keep quiet. It was quite successfully given, however, when he was standing. After the nozzle had been inserted about 2 feet into the rectum, a large quantity of water was pumped, which overflowed; and after five minutes the effect was sudden and most marked, an enormous quantity—a hundredweight, more or less—of fæces being expelled. The relief given was as if by magic, and a second administration of water brought away a still larger quantity of fæces. I then had the animal exercised for about ten minutes, a third motion taking place, other motions occurring at intervals all the afternoon. Shortly after the third motion the animal began to feed, and I had a little more than half an ounce of croton seeds administered.

The female elephant—who was, if anything, in more violent pain than the male—was treated with an enema in the same way, and with the same beneficial result, the relief being most marked. The croton seeds had acted well at the time of my first visit next morning, the ground being covered with several cart-loads of fæces. The animals are now as well as ever they were, and it was to see how they went on that I have delayed this report.

I examined the body of the male that died. The appearances were the usual ones of Enteritis in equines, the intestines being intensely inflamed and impacted, with hard masses of fæces; and had the fire-engine been used the night before, I am firmly convinced that this animal would have recovered; but owing to the lateness of the hour, I never thought of it, and even if I had, there would have been delay in obtaining it or finding men to pump it. As I can find no record of such treatment being adopted with the elephant in any of the professional works that I now have access to, I venture to make the following remarks on the matter: 1st. That a large quantity of water can be given, and the pumping continued for several minutes, if necessary. 2nd. That the enema can be given to the animal standing, if he will not remain lying down, although the latter position is the more convenient for the operator; for in the standing position, from the overflow of water, he is liable to get very wet—at least, such was my experience; I was simply deluged, and had not a dry stitch of clothing on my back. 3rd. If the animal will not allow the

nozzle to be inserted, there is no occasion to force it; for if held close to the anus, and the pump be worked hard, the force of the stream of water, if directed straight, is sufficient to fill the bowel. 4th. The nozzles of the fire-engines used by the military authorities in India are long copper tubes, tapering towards one end, on to which is screwed a spout that generally has a flange with sharp edges. I would suggest that a spout of a special shape be authorised. This could be screwed on to the existing nozzle, and would be very little extra expense. I would furthermore suggest that some definite instruction be issued by the authorities, by which the use of the fire-engine could be obtained at these stations, and men to work it when necessary.

IMPROVED MOUTH GAG.

BY JAS. COOKE, F.R.C.V.S., SCARBORO'.

THE annexed illustrations represent a mouth gag, open and folded, which I beg to introduce to the veterinary profession. It was

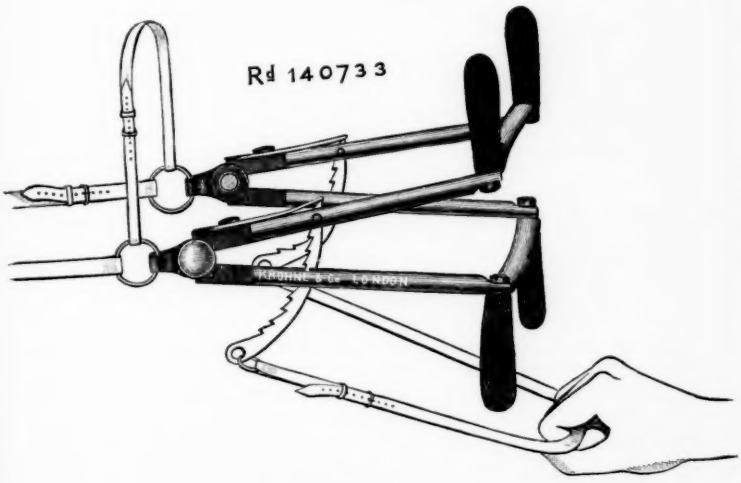

Fig. 1.

made at my suggestion by Messrs. Krohne and Sesemann, London. Having used one of a similar construction for some time, I can

speak of its advantages over other gags or "balling-irons." I have no doubt that its simplicity in structure, easy adjustment, and portability, will be greatly in favour of it coming into general use. To fix it in position, the india-rubber bars are to be placed in the animal's mouth, in a similar way to an ordinary bit, and the head-strap passed behind the ears and buckled. The gag is then opened by pulling the india-rubber bars apart; the distance

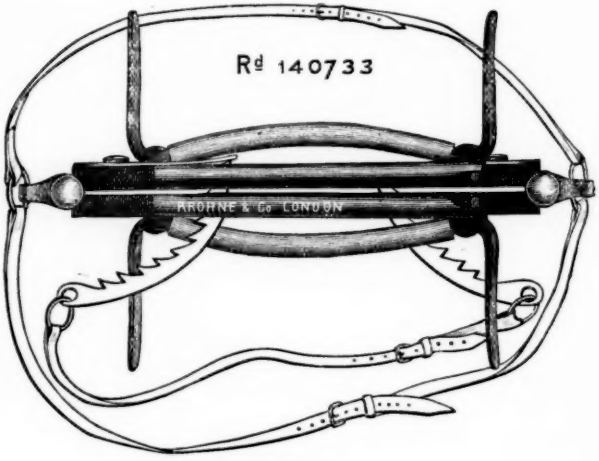

Fig. 2.

can be gauged and the mouth-piece retained in position by the spring ratchet (fig. 1). The mouth can be closed instantaneously, by simply pulling the small strap attached to the ratchet. This gag obviates the risk of injury to the operator's hand; it cannot slip sideways, as is sometimes the case with hand gags when the animal shakes its head, or the assistant loses his hold. There are no pillars or supports to impede the hand of the operator, which, I believe, are to be found in all other mouth gags. It is very light and portable; being jointed, it can be folded into a small compass and carried in the coat pocket or saddle case (fig. 2).

CLINICAL NOTES ON STRANGLES.

BY W. S. ADAMS, M.R.C.V.S., ARMY VETERINARY DEPARTMENT, OOSSOOR, INDIA.

My practice has of late years been almost entirely amongst a continual flow of young Australian horses passing through the Depôt into the Service. I have, therefore, had considerable opportunities of watching the disease commonly known as "strangles," in its varied forms. The old term "strangles" is still generally accepted, so I shall adhere to it in this paper, although it is not scientific, nor does it describe the disease. I do not like the term "adenitis," as it is often misleading, but I think that "pyogenic fever" is just what is required, and the term would include all forms of the disease. By usage, "strangles" is divided into two forms, regular or benign, and irregular or malignant. I do not think that I should complicate the description if I add a further division, which I would call "suppressed" Strangles.

The disease especially affects young horses; its pathology is obscure; but recent investigations tend to shew that it is due to the presence of a special micro-organism. The horses at this Depôt are now all Australians; last year, when on a visit to their country, from inquiries I found that Strangles was very common amongst freshly-stabled horses, but that it was very seldom serious, and often ran its course favourably without any treatment. Cases are frequent amongst horses during the voyage from Australia to India. I have not found any special liability of fresh-landed Australian horses to the disease. Cases are always cropping up, but not especially from amongst horses recently received.

On looking over the records of this Depôt, I find that Strangles occurs during all the year, but the largest percentage of cases is in the first four months; of a total of 237 cases recorded, 108, or about 45 per cent. were in those months; leaving 129, or about 55 per cent. for the remaining eight months. During these months, continuous dry easterly winds prevail, and the Strangles is usually associated with Catarrh, sore throat, and cough. This year (1889), during the months of January and February there was an epizoötic of Catarrh amongst the horses at this Depôt, and at the same time there were also several cases of Strangles.

The association of Strangles with Catarrh is rather puzzling; some have said that the disease is but a complication of the Catarrh, and this may be so in certain cases, but there is no doubt that Catarrh is not a constant symptom of Strangles, which is a

special disease of itself. I have observed that cases of Strangles occurring with Catarrh usually take the milder form, run their course with less constitutional disturbance, and are attended with less fever. The reason for this may be that this is the more natural form, and that the catarrhal discharge assists in relieving the system of the special virus of the disease of Strangles. The degree of fever present varies greatly; in uncomplicated cases I have found there is sometimes hardly a rise in the temperature. I have observed in cases unassociated with Catarrh, that the attendant fever is usually higher. I have recently had two cases, and in each the temperature was as high as 104°; yet these were cases of regular Strangles, and did well.

I would describe *benign* or *regular Strangles* as a disease in which the diagnostic abscess forms in the parotid or submaxillary region, and there are no complications; although the abscess may here be very deep-seated, and from causing pressure on the larynx they may interfere with the respiration. As this is usually a healthy abscess containing laudable pus, I would still call it a "benign" regular case of Strangles, for there is in it nothing malignant. I have often found the respiration seriously interfered with, in some cases almost to suffocation; but in no case that has come under my observation has the operation of tracheotomy been necessary. These deep-seated abscesses sometimes burst internally and the pus is discharged by the nostrils; but if the breathing is seriously interfered with we cannot wait for that fortunate eventuality. I have found that, in the majority of cases, the abscess can be reached from without. I primarily use a long exploring needle, and if I reach pus I carefully insert a long knife till the abscess is evacuated; my experience may have been exceptional, but no cases have terminated in permanent Roaring. In one case, in which a deep-seated abscess was evacuated in the manner described above, after recovery a distinct roaring sound was emitted at exercise. I treated this with long-continued hot fomentations, and the application, with friction, of a mixture of mercurial ointment and camphor; the case did well. Doubtless there was a thickening left, which became absorbed under the treatment noted.

The second form is *irregular Strangles*. In this class I would include all cases in which the abscess does not form in the usual position. These cases are usually associated with greater constitutional disturbance; the formation of pus is slower, and often after the formation and evacuation of the primary abscess the disease is not terminated, but others form in uncertain situations. From my note-book I can quote instances of this form. The most remarkable of these is one in which the abscess formed in the loose

tissue in front of the shoulder, and another in which a secondary abscess formed in the perinæal region. I have found recorded in the VETERINARY JOURNAL instances in which the strangle abscess formed in the cranium, causing death. It is especially after cases of irregular Strangles that fatal pyæmia and septicæmia are apt to result. The cases that have come under my notice have followed attacks of irregular Strangles, which have occurred in horses debilitated by the sea voyage, and which are generally anæmic and out of health.

With regard to what I would term *"suppressed" Strangles.* These cases I have found always occur in weakly horses during their first year in this country, whilst they are in an anæmic state, and perhaps struggling with their long coats in our hot weather. Horses so affected sicken, are feverish, their secretions are unhealthy, the coat stares, their limbs become œdematous, and the appetite fails. Perhaps the submaxillary and parotid glands fill and become tender, as if there were a tendency to the formation of an abscess; but the system is so low that there does not appear to be sufficient strength for relief by this natural course of the disease. Horses thus affected continue poor and unhealthy for some time; but I have found that they eventually do well, and I am unable to find any fatal case recorded. To cases of irregular Strangles, and to those I have described as suppressed Strangles, the long continued administration of preparations of iron is indispensably necessary. In ordinary cases I give the sulphate of iron, and to those more serious in character I give the tincture of muriate of iron. These agents have an excellent effect, especially the tincture, which seems sometimes to really put new life into the animal; any constipating effect that the iron may have is easily corrected by a little extra green food, or an occasional dose of sulphate of magnesia. I consider that the form the attack of Strangles may assume, and its severity, is determined, primarily, by the state of health the horse may be in at the time of attack, and, secondarily, by the conditions under which he is placed. In India, in the open, roomy stables generally used, we have little to fear from Strangles amongst healthy horses; but the attack is often very serious in unacclimatised weakly animals.

With regard to the infectiousness of the disease, I consider that there is no doubt that, under certain conditions, Strangles is infectious, especially when it is associated with Catarrh; but the adoption of very ordinary precautions should prevent any spread by infection.

Editorial.

COMPARATIVE PATHOLOGY AND BACTERIOLOGY.

THE announcement that the Royal Agricultural Society of England has generously agreed to allow the sum of Five Hundred Pounds annually to the Royal Veterinary College, with the object of founding and maintaining a Chair of Comparative Anatomy and Bacteriology at that Institution, will be received with much satisfaction by the Veterinary profession, and all those who can appreciate the importance of these subjects. For years we have complained that in our medical schools and colleges, though comparative anatomy was taught, the far more important study of comparative pathology was ignored; while in the veterinary schools, though it was dealt with from a clinical point of view, yet it was not dealt with as a special subject.

Thanks to the liberality of our great Agricultural Society, an opportunity is now afforded of repairing a great omission, and advancing veterinary medicine by well-directed and systematic research, pathological investigation and instruction being combined with the every-day progressing science of bacteriology, and also, we trust, with morbid anatomy.

The institution of such a chair should give a great impetus to research in veterinary science in this country, which has been sadly behind the Continental States in the more scientific pursuit of pathology; while in bacteriology, so far at least as animal pathology is concerned, we are nowhere.

The great majority of Veterinary Schools on the Continent have special and well-provided laboratories, presided over by thoroughly competent professors and assistant professors, and in these places, which are looked upon as most essential portions of the Colleges, excellent work is done by teachers and students, the latter acquiring a taste for and a knowledge of scientific medicine, which must place them in a better position to secure the health and recover from disease the animals entrusted to their care. We may refer more particularly to the splendid laboratories of the Berlin, Vienna, Munich, Lyons, and Alfort Veterinary Schools, for proof of the great importance now attached to pathology and bacteriology in Veterinary teaching; for it must be remembered that lectures on these subjects are of little value without practical teaching and demonstrations in the laboratory

It is to be hoped that a thoroughly competent teacher will be found for the new chair, and that in the course of time we shall be able to claim for our schools a share in the great work which has been going on for some years in the Continental schools, by which students have been endowed with higher notions of their calling, and rendered more able to pursue it with advantage to themselves and their country; while science has been greatly benefitted by the results of careful and never ceasing investigation into the mysteries of life, under favourable and unfavourable conditions.

GLYCERINE IN THE TREATMENT OF COLIC.

MR. COATES has an interesting article in the American *Veterinary Review* for January, on the use of glycerine in the treatment of Flatulent Colic. In the early period of his practice, his success in dealing with this condition was not considerable, failure being the rule. Then the adopted punction of the intestines as a *dernier ressort*, and was so far fortunate that, in the first twelve years, he had operated upon more than a thousand cases with a minimum of deaths. Since that time the operation is practised all over the country with the greatest success. But, he remarks, the one unremitting search of the day is for a key to the true nature of the disease, and for remedies which do no violence to natural laws. A large number of popular remedies suffer from the effects of being too generally recommended. According to the claims of their originators, they are useful in the most bewildering variety of ailments, curing every disease. Where too much is claimed, we are apt to grant too little; and when we have been disappointed in using a drug in cases not suited to it, we are likely to doubt altogether its possession of any therapeutic value.

"Within the past few years, the use of glycerine as a remedial agent in cases of constipation, has been receiving much attention by practitioners, both of human and veterinary medicine. Most of the modern authorities report very enthusiastically in its favour, but none of them have as yet written anything with respect to its use in flatulency; for it is certainly to be regarded as one of the best agents.

"It is wonderful that in this substance we have, if we use it properly, one of the most potent weapons in the warfare with Flatulent Colic. Having had access to a large number of both medical and veterinary journals and pamphlets, my attention was directed to an article on the use of rectal injections of pure glycerine in constipation, and I was somewhat astonished at the prompt action that was reported to follow its administration.

"Being always ready to try any new remedy, I have employed this in more than a hundred cases of constipation in dogs, with a prompt action in every instance, within from one to three minutes—rarely exceeding two minutes—after the enema was given. As a firm believer in its efficacy, I then tried it upon a number of horses, and found it effective in three or four minutes, and all the more readily when the rectum was full of fæces. Then I employed it in three cases of constipation in horses, but with poor success; for, from my observation, the rectum must be partially filled with fæces, otherwise no action takes place, except the prompt evacuation of the glycerine and a considerable amount of flatus. Acting upon the thought suggested by the fact of the violent expulsion of flatus during its use in these cases, I began by using enemata of pure glycerine in cases of Flatulent Colic as an experiment. The results of this method are the best I have ever obtained in the treatment of flatulency.

"The only real difficulty in treating cases by puncturing, is the objection of the owners, who are afraid of serious results ensuing, in seeing a trocar introduced into the abdominal cavity. But however admirable this method may be in the treatment of flatulency, if another can be shown to be as effective, and at the same time more safe and simple, the former should give way to the latter.

"During the past four months I have used glycerine in ten consecutive cases of Flatulent Colic, in which the abdomen was greatly distended, and the results have been most gratifying, as there was complete recovery in each instance; and as sufficient time has now elapsed since the treatment of these cases, I report the value of this article for the benefit of the profession, as other members may like to employ it.

"In the cases above-mentioned, I found that one ounce of pure glycerine injected into the rectum has caused a prompt discharge of flatus from the intestine, which is usually maintained for two or three minutes, with a subsidence of the distended abdominal walls. Should there not be a complete collapse of the walls, the same quantity of glycerine should be repeated once, twice, or thrice, at intervals of ten or fifteen minutes.

"I am not prepared to say how glycerine acts in these cases, but it is probably by exciting reflex action, thereby causing increased peristalsis of the large intestines. Anacker's experiments on various animals prove that from half a drachm to half an ounce is sufficient to increase the movement of the bowels. Professor Vogel reports that glycerine, when pure, or diluted with one-third of water, and injected into the rectum, causes more or less muscular irritation of that viscus, and induces remarkably prompt movement.

"In a few minutes after the injection of glycerine, owing to its action upon the mucous membrane, we observe the animal becoming uneasy; the anus contracts and dilates spasmodically, the tail is raised at intervals, then arching of the back is followed by defecation. Two or three motions are the average number, but there are frequently more; and it is claimed, from the condition shown, that they come from the large intestines. The action of the glycerine is not continued longer than ten minutes.

"It has been shown that the action of glycerine in constipation is due to its hygroscopic power—drawing the moisture from the tissues of the rectum, slightly irritating the nerves, and causing contraction of the viscus. Experiments have demonstated that the quantity injected does not make much difference, but the quality does. Pure, undiluted, neutral glycerine; with a specific gravity of 1·225 to 1·235 is the best to use."

Schindelka has employed glycerine in more than two hundred and fifty cases—horses, dogs, cats, and goats, and with positive results in every case. He claims that in young or old, sick or healthy horses, about eighty drops are sufficient to cause defecation. For cats twenty drops were used, and for goats thirty drops.

HUMAN AND BOVINE TUBERCULOSIS.

THE Committee of the North of Ireland Branch of the British Medical Association, consisting of Drs. Burden, Lindsay, Strahan, and Calwell, appointed to inquire into the question of bovine Tuberculosis and its transmissibility to man, presented a report at a meeting of the Branch, held at the Royal Hospital, Belfast, on December 12th. The report was unanimously adopted.

PATHOLOGY AND ETIOLOGY.

Terminology.—At the outset the committee found it necessary to satisfy themselves regarding the views held on the general nature of the disease. The disease is known by various names, according to the parts of the body it attacks or the kinds of lesions it produces; for example, in the human subject Scrofula, Pulmonary Phthisis, Tabes Mesenterica, Tubercular Meningitis, etc.; in the cow the "Grapes," or in Germany "Pearl Disease," and in France "Potato Disease."

Pathological Identity.—It is now proved beyond all reasonable doubt, and accepted by nearly every authority, that these diseases are all forms of one and the same process, and all caused by a parasitic micro-organism, called from its discoverer "Koch's Bacillus," or the Bacillus Tuberculosis; and that the disease is essentially the same, whether it attacks man, cow, or fowl. Any difference in the size of the microbe, or in its growth, is due to the change of medium. The bacillus flourishes best at a temperature of 98.5° to

100.5° F.; below 82° F. growth ceases, but the parasite does not die; it is slowly killed by being kept at 107.5° F. for several weeks, or by being boiled for about half an hour. The spores of the bacillus seem still more tenacious of life, and cannot be said to follow these laws exactly. The bacilli are able to resist desiccation for long periods. Tubercular matter, after being dried for several months, is still able to reproduce the disease. The virus of fresh sputum is destroyed by a 5 per cent. solution of carbolic acid, by a saturated aqueous solution of salicylic acid, by absolute alcohol (in the proportion of 3 to 1 of sputum) in twenty hours, but not under. Many other drugs fail completely. Steam destroys it in from fifteen to sixty minutes. According to M. Cornet the ordinary disinfection of household furniture is quite useless for this microbe. Besides flourishing in living animal tissue, the bacillus can be cultivated in sterilised blood serum and other media, when kept at a proper temperature. Koch still obtained the active microbe after carrying it through thirty-four generations of cultures, for a time extending through twenty-two months.

Predisposing Causes.—Although it is now practically accepted that no form of Tuberculosis exists without the bacillus having been the exciting cause, the following are given as predisposing causes in all animals:—(1) malnutrition; (2) bad ventilation; (3) exhausting secretions, for example, prolonged lactation; (4) hereditary influence; (5) youth; (6) dampness of soil. All animals are not equally attacked by the disease; those in the wild state escape; similarly among human beings, nomad tribes and savages are practically exempt until they are brought into contact with civilisation, Carnivora are more exempt than herbivora or omnivora, but every warm-blooded animal is liable (only one case is reported in the reptilia—an Italian snake in zoological gardens in Austria; none in amphibia, pisces, or invertebrata). The following list is arranged in order of respective liability, as given in the Departmental Committee Report: man, milch cow, fowl, rodents, pigs, goats, sheep, horses, carnivora.

Mortality from Tuberculosis.—In man, 10 to 14 per cent. of all deaths are due to Tuberculosis; 150,000, it has been said, die annually in the British Isles of Consumption. From 3 to 4 persons per 1,000 living die annually in Ireland of Tuberculosis (Sir C. Cameron). On referring to the Registrar-General's summary, it is seen that in the ten years 1871-80 tubercular diseases of the alimentary canal caused, among children under five years of age, an average mortality of 2.55 per 1,000 per annum, which is more than twelve times as great as the mortality from these diseases at any other age period of five years. From an analysis of 127 cases of Tuberculosis in children, Woodhead found 43 instances of tubercular ulceration of intestine, and 100 of tubercular degeneration of mesenteric glands. In addition to the actual mortality from the different varieties of Tuberculosis, it must be remembered that much suffering, impairment of health and usefulness, and loss to the community also result. Among cattle, dairy cows are most affected; 25, 50, 30, 4.5 3.5 37.5 per cent. in various cases are given in the Departmental Committee Report, but these are immediately qualified by paragraph 60, which says: "On analysis it will be found that, as an almost invariable rule, the low percentages given are those for herds fed in the open air most of the year, the high death-rates being among dairy cattle confined in sheds." In Dublin, among slaughtered animals, 4.9 per cent.; in Edinburgh, 0.2 per cent. of all slaughtered; in Glasgow, 1 in 180; in Germany, 1.5 to 20 per cent., according to district; in Paris abattoirs, 0.6 per cent.; average of all France, 0.5 per cent.; in Berlin, in 1887-88, where inspection is very strict, 249 men being engaged in it, 4,300 out of 130,733 (high average). The disease occurs with severity among fowls, generally in a fatally epidemic form, every bird in the farmyard being swept off.

Local and General Tuberculosis.—The disease in all animals may be "local," that is apparently affecting for a time one particular spot; or it may be "generalised," that is, manifestly affecting various parts of the body. The local variety is more common in man than in animals; in cattle it is the exception. In cattle the lungs, pleura, and serous membranes and glands are the favourite seats, any and each of the other organs, including the udder, being occasionally affected. The marrow of bone (in guinea-pig) has been affected at an early period of the disease, and the bacilli present in considerable number, before they were recognisable by changes obvious to the eye. The same part has also been found affected in a cow. The muscles, though rarely, have also been found affected (Sir Charles Cameron, Hamilton, McCall). The bacilli have also been found in the blood and emboli, and tubercular ulceration of blood-vessels has been demonstrated. It is believed that the bacilli do not multiply in the blood, but only when they are lodged in some suitable nidus. The bacilli have been found in the secretions of diseased organs, the sputum, milk, urine, fæces, and these have also been proved to be infective.

Modes of Infection.—The bacilli have been proved to enter the body in the following ways: (1) By inhalation. This has been proved by causing animals to inhale tuberculous matter dried into dust, or a fine spray containing tuberculous juice. (2) By ingestion. Tuberculous material produces the disease, when swallowed by animals. (3) By inoculation. Inoculation with tuberculous material nearly invariably causes the disease. It has been supposed to be conveyed directly by (4) heredity. The great majority of opinion is that a special diathesis, susceptible to the poison, is transmitted. Cases have been published of the fœtus of an affected animal being found to be so likewise. It has been pointed out that there is no proof that every case of disease in the lungs necessarily follows from inhalation, as in experiments from ingestion, inoculation (and in the case of a fœtal calf), the lungs are found frequently attacked. The bacilli have been proved to be able to penetrate healthy mucous membrane by M. Cornil.

Regulation of Sale of the Flesh of Tuberculous Animals.

In Various Countries.—The Committee now insert the practices and recommendations with regard to the sale of carcases of tubercular animals as food. The Jews have always had a very strict code of inspection, carried out by specially-qualified men, and every animal (cow, sheep, or poultry) whose viscera presented any sign of Tuberculosis is entirely rejected by them. In the United Kingdom, the general practice appears to be to condemn the animal if the disease is far advanced and the body wasted; if the disease is local, and the body in fair condition, to remove and condemn the diseased viscera, and allow the rest to be sold as sound flesh. But this is not the uniform custom. There is evidence of a regular trade being done in "wasters," "mincers," that is, animals far spent with the disease, which are sold for about 30s. to £3, whose flesh is combined with that of healthy animals for making sausages. There is also evidence of dairy cows being used for their milk as long as they will give a fair quantity, and when failing, being fattened as far as possible and sent to the butcher. In Germany the flesh is classified into such as may be sold on the butcher's stall, and such as can only be sold at a public stall (named the *Freibank*), and by a city *employé*. Tuberculosis of the costal pleura of the first degree is ranged into the second of these classes, and a ticket affixed to the flesh informs the public regarding the cause of its having been remitted to the *Freibank*. In France, a decree was made dated July 18th, 1888:—"The flesh of tuberculous animals shall be excluded from consumption (1) if the lesions are generalised, that is to say, not confined exclusively to the visceral

organs and their lymphatic glands; (2) if the lesions, although localised, have invaded the greater part of an organ, or are manifested by an eruption, or the walls of the chest, or of the abdominal cavity. Such flesh excluded from consumption, and also the tuberculous viscera, shall not be used for animals, and ought to be destroyed." In Austria, when the Tuberculosis is limited to a local process, the flesh of good appearance, and the lymphatic glands of the chest and intestines unaffected, the meat is passed as healthy, the intestines alone being rejected. In Berlin, a very limited Tuberculosis is considered as having no noxious influence on health, especially if the animals have been well nourished for a long time. The use of such flesh is permitted after seizure of the parts affected, but it must be sold as meat of mediocre quality, and under strict control. In Edinburgh, Greenock (since 1874), Paisley, and Glasgow tubercular meat is practically refused in all its degrees. An international veterinary congress at Brussels in 1883 declared by a majority of one for complete seizure in every case. The French veterinary surgeons at Paris in 1885 modified this, allowing partial seizure. The Congress for the Study of Tuberculosis in Man and Animal in 1888, at Paris, voted, with only three dissentients, for complete seizure. The Report of the Departmental Committee, page 46, says: "Further, although the bacilli may be found but rarely in the flesh, still the chance of their being present, either there or in the blood, is too probable to ever allow of the flesh of a tubercular animal being used for food under any circumstances, either for man or the lower animals." The test case in Glasgow in May, 1889, resulted in a verdict for destruction of both animals, although probably both, certainly one, would have been passed elsewhere.

Infection of Man from the Lower Animals.

The probability of the transmission of the disease from animal to man rests on the following points: (1) the disease is the same in man and animal; (2) man is very susceptible to the disease; (3) animals which are much less susceptible than man become affected by experimental inhalation, ingestion, and inoculation. It is, therefore, a fair deduction that man may become affected by the same methods. Practically, it might be said, it must be by one or other of these methods, although not experimentally. This is supported by an ever-increasing number of recorded cases in which man seems to have been infected from the lower animals; but as might be expected, owing to the impossibility of experimenting on many, direct proof is somewhat scanty. As regards the possibility of man being infected from the lower animals by—

1. *Inhalation.*—The Committee would draw attention to Cornet's experiments, which prove that the dust of rooms in which consumptives have lived is capable of producing the disease. If this be so, it seems probable that animals may also infect the air in a similar way.

2. *Ingestion* (*a*) of Milk.—Professor Bang, at the International Medical Congress at Copenhagen, gave the results of examination of twenty-seven cases of tubercular disease of the udder in cattle, in the milk of which he was able to demonstrate the bacilli, and by the inoculation and injection of the milk to produce the disease in pigs and rabbits; he and Galtier showed that the cream butter-milk and butter shared the infectivity. Bang's conclusions have been abundantly supported by numerous observers, and it has also been shown that the disease may be present in the udder, and the bacilli found in the tissues, in the ducts, and in the milk sometimes in enormous quantities, without the disease being recognisable (otherwise) during life. Distinct outbreaks of the disease among pigs, etc., have frequently occurred, which have been traced to milk from affected cows. Ernst, of Boston, U.S.A.,

gives results of experiments tending to show that the milk of cows affected with Tuberculosis may contain bacilli and be infective, although no discoverable lesion is present in the udder. Considering the large percentage of dairy cows which are known to be affected, this is rather startling. There is a general concensus of opinion as to the danger of milk from tubercular udders, and many are inclined to believe that it is a fertile source of Tabes Mesenterica in the young (*v.* statistics *supra*). A large number of cases of mankind (chiefly children) being affected, presumably from milk, have been published. (*b*) OF MEAT.—As no one in the present day would advocate the use of actually diseased portions of meat for food, the extreme danger of such being undoubted, the evidence selected on this head is confined to the power of infectivity of the flesh of a carcass as usually sold to the public, that is, with the tuberculous viscera removed, the pleura and peritoneum "stripped."

Condemnation of Meat.—The advocates of the seizure of the entire carcass of animals affected to any extent base their opinion on the following grounds:—1. The flesh has been proved to be infective experimentally, as in the following: Of 35 animals fed on raw flesh, 22 per cent. became affected; of 46 fed in the same manner, 13 per cent. suffered (Gerlach and Johne). Two young pigs similarly fed for ten days, also became diseased (Peuch). Eleven cats fed for two to four days, without result (Nocard). By inoculation of raw muscle juice of cows seized in the abattoirs, one of 21 became affected. Experiments cited at the Paris Congress in 1888 give 13 of 137 animals affected by inoculation of similar substance. With regard to fat animals, disseminated tubercle may be present in such; two rabbits became affected from juice of muscle of a cow in very good condition; fat meat is more apt to be underdone than lean. Also, though rarely, muscle has at times been visibly diseased. 2. It has been shown that the bacilli are found in the blood stream, and thence conveyed to all parts of the body. 3. It is the opinion of most authorities that it is impossible to remove all the diseased portions by "stripping"; it would require a careful dissection to do so. 4. That the disease may be in parts that cannot be removed, or recognised in the ordinary course; for example, bone. 5. It is found on careful examination that very few cases can be strictly classified as "localised"; only two out of 81 were correctly characterised as such (Veyssière). 6. Ordinary cooking is insufficient to destroy infectivity, the juice from the inside of a piece of roasted flesh of a tuberculous pig was still able to infect a rabbit. Tuberculous flesh soaked in boiling water for ten to fifteen minutes still gave positive results by feeding in 35 per cent. of 62 experiments. Tubercular juice heated to 198° F. infected one animal out of six. It is generally admitted that the usual heat to which the inside of a large roast is raised, would be quite ineffective as a bacillicide in this case. The advocates of the seizure of the diseased portion only, who hold that parts unaffected may be safely consumed as food, rest their opinion on the theory that the disease may be for a time strictly local, and that the chance of infection from apparently sound flesh is too remote to justify stringent measures.

3. *Inoculation.*—The possibility of this method is hardly questioned; there is some evidence that it may be more frequent than is generally supposed, and cases have been reported of undoubted inoculation in man.

Relation of Human and Bovine Death-rate from Tuberculosis.—The Committee would point out that there is some evidence in support of the view that some relation exists between the death-rate of man and animal from the disease, and this relation is affected by the use of tuberculous flesh. In 1881 the authorities of the Grand Duchy of Baden issued a chart, which applies to fifty-two towns, and shows that where Tuberculosis is prevalent among cattle it is equally prevalent amongst the human population, and it is par-

ticularly prevalent in those towns in which the number of low-class butchers is greatest. The general statement is supported by cases cited in Q. 5,105, Q. 5,367, and Q. 8,791 of evidence before Departmental Committee.

CONCLUSIONS AND RECOMMENDATIONS.

A. The Committee would draw attention to two points that have much impressed them:—First, a generally prevailing idea of the insanitary condition of dairies, byres, etc., and of the unhealthy lives that many of our domesticated animals are compelled to live, reacting on the health of the community. Secondly, the expressed opinion of many authorities that the licensing and inspection of dairies, byres, etc., should be rigid and frequent; and that only public abattoirs should exist, where every carcass sold to the public as food should be carefully examined.

B. The Committee would also express the opinion:—First, that there is no doubt of the danger of drinking the unboiled milk of cows whose udders are tubercular; that there is a risk, even when the udders present no manifest lesion, if the animal is diseased elsewhere. Secondly, that there is a certain amount of danger in allowing the flesh of an animal affected with local Tuberculosis to be sold for consumption; to what extent this risk extends they are not prepared to say, it probably varies in different cases. Thirdly, that some such resolutions or remedial measures as those of the Paris Congress, or of the report of the Departmental Committee, paragraphs 65 *et seq.*, should be adopted and published.

C. Further, at a point of medical investigation of great scientific interest and of practical utility, they would recommend that in all cases of Tuberculosis springing up suddenly in a family, especially in isolated country houses and villages, the condition of all animals from which the disease might have spread should be carefully investigated, and the results published in a medical journal.

RESOLUTION.

The following resolution was also passed:—"That in view of the recent discoveries with regard to human and bovine Tuberculosis, and of the opinions held by many eminent scientific authorities concerning the communicability of Tuberculosis from man to animal and from animal to man, and in view of the enormous prevalence of the disease in one form or another among mankind, this meeting of the North of Ireland Branch of the British Medical Association disapproves of the practice of allowing any part of the carcass of an animal, which has been shown to have been affected with Tuberculosis, to be sold as sound and wholesome meat."

"THE CHEMISTRY OF THE URINE OF THE HORSE."

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(*Continued from page* 34.)

Urine of Rest.

	Total nitrogen.	Urea.
23rd February.....	44·60 grams.	84·0 grams.
26th "	57·10 "	80·0 "
1st March	31·36 "	56·0 "
13th "	19·00 "	40·5 "

The animal was worked from the 14th until the 24th March, and again on the 26th and 28th March.

Urine of Work.

	Total nitrogen.	Urea.
25th March	16·324 grams.	30·25 grams.
27th „	25·725 „	52·25 „
29th „	23·000 „	47·50 „

The table clearly shows us how variable is the excretion of urea in spite of the fact that the diet remained the same; it is evident that the urea in horses is no more a measure of the muscular waste than it is in man. Kellner's experiments* are remarkably complete. He made horses produce a definite amount of work; the experiment was divided into five periods.

	Work produced.	Nitrogen produced.
1st Period....	475,000 kilogrammeters	99·0 grams.
2nd „	950,000 „	109·3 „
3rd „	1,425,000 „	116·8 „
4th „	950,000 „	110·2 „
5th „	475,000 „	98·3 „

Here we have a slight increase in the output of nitrogen, quite insufficient to account for the increased work produced.

Hippuric Acid.—Owing to the statement made by Liebig that benzoic acid was found in the urine of working horses, and hippuric in the urine of those that rested—a statement which has often been repeated since his time, and almost formulated into the doctrine that benzoic was present in the horses of the poor, whilst hippuric predominated in those of the wealthy—I have been at great pains to discover what element of truth the doctrine contained.

The method employed for the determination of benzoic and hippuric acids was the following:—

The urine is treated with excess of milk of lime, filtered, evaporated to one-fifth of its bulk, and acidified with HCl. If hippuric acid be present it forms in some cases almost immediately, but in the majority it has to stand from twelve to twenty-four hours; if benzoic be present it forms almost at once. Both acids are in a highly impure condition, the hippuric (in black seaweed-like masses) is dissolved in water, boiled, and, whilst boiling, a current of chlorine gas passed through it to destroy the organic matter; it is then filtered hot, and deposits pure hippuric acid in fine needles in the course of a few hours. The impure benzoic is filtered, the solid residue collected in a capsule, dried at a low temperature, and carefully volatilised, when beautiful white sparkling crystals form, which are carefully removed, collected, and weighed; or the impure mass may be dissolved in ether, the solution evaporated, and then volatilised. This volatilisation requires great care to avoid loss.

I have tried many methods of obtaining these acids, but none give such satisfactory results as the above.

The examination of the twenty-four hours' urine of fifty-four horses revealed the presence of hippuric acid on only eight occasions.

The number of horses at work was seventeen, and out of these I found hippuric acid twice, 2·144 grams and 18·6 grams respectively. The number of horses standing idle was thirty-seven; of this number I found hippuric acid six times; two of these observations I must deduct, as the horses were not in perfect health, leaving four out of thirty-five as the proportion in which hippuric acid was detected.

In the second series of observations consisting of thirty horses, the urine from which was collected and at once submitted to analysis, I found that

* "Landw. Jahrbucher," 1879.

out of eighteen working horses thirteen had hippuric acid in the urine and five had none. Out of twelve horses at rest three had hippuric acid, and nine had none. The diet in all cases was the same. This would appear to reverse Liebig's theory.

My observations show that hippuric acid is generally found in the urine of working horses—seldom found in the urine of resting horses, and that it is rarely found in urine twenty-four hours old.

Diet influences the production of hippuric acid, and it is increased by using meadow-hay and oat-straw, and decreased by using clover, peas, wheat, oats, etc.; as the urea rises the hippuric acid falls, and *vice versa*. (Tereg,* Weiske and Kellner.†)

The mean hippuric acid found was 15·58 grams, the maximum 28·56, and the minimum 9·18 grams in twenty-fours hours.

Salkowski places the hippuric acid at 15·597 grams daily.

Benzoic Acid.—Benzoic acid is generally found in stale urine, and in the urine of horses which are doing no work. It may, however, be found in working horses, or a urine may possess neither hippuric or benzoic acids.

The mean benzoic acid found in resting horses was 6·53 grams, in those at work 3·62 grams in twenty-four hours.

Total Nitrogen.—In my earlier observations I believed that the nitrogen of work was greater than the nitrogen of rest.

I have explained under urea how I fell into the error, and I have there fully detailed the nitrogen during rest and work in a series of experiments on a pony. The nitrogen is as variable as the urea; in my earlier series it varied for horses between 46 and 70 grams per diem. Here the diet undoubtedly influenced its production—as previously pointed out under the head of urea.

E. Salkowski states that a horse fed on 2 kilos. oats, 2 kilos. hay, and 1 kilo. bran, excreted 65·34 grams of total nitrogen in twenty-four hours.

According to Tereg and Munk, when horses are fed on rye instead of hay and oats the nitrogen shows no change, but by feeding with peas the nitrogen increases, and that in proportion to the quantity given. If fed on hay alone the excreted nitrogen is very great, a fact as pointed out by these observers, which is very difficult of explanation.

Ammonia.—This exists in the urine of horses free and combined; the latter has been dealt with and its origin explained, the free ammonia may or may not be due to fermentation occurring in the bladder, but from a very large number of observations on perfectly healthy horses I affirm that ammonia exists in a free state in fresh urine.

It may be that ammoniacal fermentation has already taken place in the bladder due to the quantity of mucus, and the long period during which the majority of horses retain their urine, due both to habit and circumstances, but it is quite certain that the perfectly fresh urine caught directly into clean vessels contains a distinct amount of ammonia. The amount of this ammonia cannot be estimated in urine twenty-four hours old, because it is impossible to distinguish it from the ammonia formed as the result of urea decomposition.

The only way I have attempted to overcome the difficulty is by collecting perfectly fresh urine, and by Schlösing's method determining the ammonia before the slightest urea change, outside the body, has occurred. This process is far from being free from error, but is the least objectionable mode of procedure.

I have previously stated that the ammonia found in urine twenty-four hours old may safely be calculated as urea, for that is undoubtedly its origin.

* "Encyklopädie," etc.

† Watts' "Dictionary of Chemistry," vol. viii., part 2.

The preformed ammonia is probably completely given off before the twenty-four hours have ended. The amount of free ammonia in the urine of rest I have calculated at 2·516 grams, and in the urine of work 5·3 grams, but I do not regard these results as completely trustworthy.

They nevertheless agree very closely, particularly that of work, with the ammonia obtained by the direct titration of fresh urine with a standard acid.

Phosphoric Acid.—This acid is only found in comparatively small quantities in the urine of horses, the phosphates being principally eliminated by the bowels.

According to Boussingault, horses do not excrete phosphoric acid; this is not in accordance with our experience.

Diet possesses no influence over its production, and the effect of rest and work is insignificant. I found that working horses excreted 1·897 grams as a mean, whilst horses at rest excreted 1·3 grams. Age has no influence over its production. The largest amount found was 9·45 grams, and the smallest 0·13 gram.

The amount of P_2O_5 will vary very considerably, many horses only just possessing traces of the acid, others distinct quantities. I am inclined to regard the mean amounts of phosphoric acid given above for rest and work as rather high.

Sulphuric Acid and other Sulphur Compounds.—Sulphur exists in two distinct forms in the urine of horses; the one I have calculated as SO_3, the other, known as sulphur compounds, is calculated as S. Diet appeared to have no influence in the production of SO_3, work, on the other hand, increased it. Working horses excreted on an average 15·289 grams, and horses at rest 10 6468 grams in twenty-four hours. The SO_3 appears to be increased in working horses in the same proportion as the urea.

The sulphur compounds are said to exist in combination with phenol and other organic substances; on this point I am not prepared to offer any opinion.*

Work did not influence their production. Working horses yielded 7·6092 grams, horses at rest 7·3166 grams of sulphur. It is singular that horses should excrete so much sulphuric acid and other sulphur compounds.

Chlorine.—More chlorine is excreted during rest than work, the mean amount for the former being 31·7119 grams, and for the latter 21·9806 grams in twenty-four hours.

The chlorine is not affected by diet; it is united with potassium and sodium; the amount of the latter metal in the urine of the horse is small, and only yields with the chlorine about 5½ grams of NaCl daily; the major part of the chlorine is united with potassium, which is most abundant.

Lime.—More lime exists in the urine of the horse than is soluble in an alkaline fluid. We have therefore lime both dissolved and merely suspended; these have been estimated separately. No direct connection could be traced

* Some excellent work has, however, been done in this direction by Salkowski, Tereg, and Munk. The latter observers state that on an average horses excrete 10·886 grams of tribromphenol in twenty-four hours, 10·175 grams of inorganic sulphur, and 5 039 grams organic sulphur in twenty-four hours. The tribromphenol is equivalent to 3 grams of phenol daily. Great importance is laid by these observers on the excretion of phenol, a process which is suspended during intestinal complaints, particularly Colic, and is, according to them and others, a cause of the rapid death in these affections, produced by the toxic effect of the unexcreted phenol. The production of phenol in the healthy body is greatly influenced by diet, being largest on rye and hay, one part peas and two parts oats, and on hay alone; it is smallest on rye alone, and next smallest on oats and hay. Salkowski is inclined to regard Tereg and Munk's estimate of 3 grams of phenol daily as too high.

between the lime in the urine and the lime in the food, but between the production of lime and work a direct connection appeared. The mean amount of dissolved CaO at work was found to be 1·9027 grams, and of the same salt at rest 3·4367 grams in twenty-four hours.

Suspended Lime.—More suspended lime was found in the urine of horses at work than in those at rest, for the former 3·69 grams, and for the latter 1·1043 grams CaO. To state these points briefly, when horses work they excrete more lime in their urine than when at rest, but the lime of work is principally suspended, and only a part of it dissolved; whereas, the lime of rest is nearly all dissolved, and but little of it suspended. There is no connection between the amount of mucus in the urine and the suspended lime.

The largest amount of dissolved lime I found was 16·45 grams, and the smallest 0·627 gram in twenty-four hours. The lime is found principally in conjunction with a carbonate, but I have also found sulphate and oxalate. The most common deposit in horse's urine is the wheel-shaped crystals of lime carbonate.

On adding an acid to urine, extreme effervescence occurs as a rule, and the fluid is left quite clear like human urine; I have only on a few occasions witnessed any different results from these. The effervescence is usually extreme.

Magnesia.—This, like the lime, exists partly in the suspended state and partly dissolved. Neither diet nor work have any influence over the production of magnesia. The soluble magnesia of work is 2·63 grams, and of rest 2·975 grams. The suspended magnesia of rest is 0·4218 gram, and of work 0·7925 gram.

Potassium.—This metal is found largely in horse's urine; it is principally combined with chlorine.

Rest and work influence its production; there is more potash found in the urine of resting than in the urine of working horses. Working horses gave 27·06 grams, whilst resting horses gave 36·59 grams in twenty-four hours.

Sodium is only found in small quantities in the urine, the mean amount being 2·17 grams, and it is combined with chlorine, yielding a little over 5½ grams of common salt for the twenty-four hours. The mean amount of sodium in working horses was 1·84 grams in twenty-four hours; in horses at rest it was larger, viz., 2·5 grams, yielding with chlorine less than 6½ grams of common salt per diem.

In some recent experiments, carried out on a pony, on the excretion of soda and potash during rest and work, the animal remaining under observation for several days, I found that the mean amount of mixed chlorides excreted remained about the same, viz., 40 grams daily both at rest and work, but that during rest more potash and less soda was found than during work. This does not agree with the above experiments on the horse.

I have compiled, from the mean result obtained, the following table of analyses of urine of healthy horses at work and rest.

I observe that my inorganic solids of rest are in excess of the ash found, and moreover, that the amount of organic substances found in the urine of rest is much smaller than that obtained by evaporation and weighing. In both these matters the urine of work gives better results.

It is obvious, however, that I have only dealt with the most common and important substances found in urine; there are many organic substances which I have not looked for, or estimated, or have only estimated on so few occasions as not to entitle them to a place in the table.

I do not for one moment intend it to be supposed that the table represents what all horses at work or rest excrete, for I have previously stated that the horse's urine is a fluid of *very varying composition;* all the table repre-

sents is the mean of a large number of carefully made observations, which must be accepted as an approximation to the truth rather than as absolutely true.

Table showing the Mean Composition of the Twenty-four Hours' Urine of Horses at Rest and Work.

	Rest.	Work.
	c.c.	c.c.
Quantity	4935	4474
Specific gravity	1036	1036
	grams.	grams.
Total solids	230·0713	232·157
Organic solids	146·1649	152·190
Inorganic solids	83·9064	79·967
Urea	98·5110	
Ammonia carbonate as urea	13·1185	
Ammonia	2·516	5·3000
Benzoic acid	6·530	—
Hippuric acid	—	15·5870
Phosphoric Anhydride	1·3000	1·8970
Sulphuric anhydride	10·6468	15·2890
Other sulphur compounds	7·3166	7·6902
Chlorine	31·7119	21·9806
Calcium oxide	3·4367	1·9027
Magnesium oxide	2·9750	2·6300
Potassium oxide	36·5900	27·0600
Sodium oxide	2·5000	1·8400

I have made no mention of the changes which occur in the urine as the result of disease, for the reason that I purpose devoting a special article to this subject, which is at present under investigation, though necessarily slow in progress, and far from being completed.

It is singular to observe that any important derangement of the horse's health is associated with an acid urine, the presence of uric acid and large phosphates, and the production of a clear human-like urine in appearance; this change is produced as soon as the animal refuses food and commences to live on its own tissues.

THE VENEREAL DISEASES OF THE HORSE.

A COMMISSION, composed of Messrs. Nocard, Trasbot, and Laquerrière, was recently appointed by the *Société Centrale de Médecine Vétérinaire* of Paris, to examine and report upon a work of M. Blaise, Veterinary Surgeon of the Remount Depot at Blidah, Algeria, on the Venereal Diseases of the Horse. The report was presented by M. Laquerrière at a meeting lately. The treatise is divided into three chapters, entitled as follows:—(1) Observations on Syphilis; (2) History of Cases of Stallions Cured of or Dead from Syphilis; (3) Venereal Diseases of the Horse; which is further divided into (*a*) Genital Exanthema and (*b*) The *maladie du coit*, or Syphilis.

I.—*Observations on Syphilis.*

The researches of the author on this subject are considerable. They include clinical observations during the past five-and-twenty years, carried out partly by his predecessors, partly by himself. Of the former, he particularly points to Viardot, who has continued to practise for more than twenty years in the remount depots of Constantine and Blidah (Algeria), and whose important memoir on Syphilis, published in the *Journal de Médecine Vétérinaire Militaire*, of 1866, has never been properly consulted by authors who have since interested themselves in this subject.

The Constantine Depot is first considered. In 1861, four stallions were attacked by this disease; two died, and two recovered and were put to service the following year. In 1862, one stallion, which remained under treatment for two years and recovered. In 1863, four stallions were attacked, only one of which survived, cured. In 1864, one stallion was attacked and recovered completely.

In the Blidah Depot, from 1865 to 1870, some few cases only of Genital Exanthema occurred; after 1870 Syphilis broke out in a certain number of stallions every year, sometimes amongst those at Blidah, sometimes amongst the horses in the branch depots, specially those of Orléansville and Milianah.

In the various cases reported on by M. Blaise, they either terminated fatally, or were castrated and sold, and afterwards lost sight of. Against this system of sale I (M. Laquerrière) protested strongly to the military authorities, as being contrary to the true interests of the State, and to the regulations contained under Veterinary Sanitary Science and Police; and the more especially as the greater number of animals sold died within a short period, while the price realised for them was often only a few francs.

To recapitulate, in the Constantine Depot from 1861 to 1864 ten stallions were attacked, and of these five were cured and five died.

In the Blidah Depot there were no cases from 1865 to 1869 inclusive; from 1870 to 1886, fifty-four stallions were attacked, and out of this number *five were cured*, thirteen were sold after castration, and thirty-six succumbed. I have intentionally underlined the cases of recovery, for without denying that nature is not powerful enough to triumph over the malady, I am obliged to admit from my own personal experience, that the recoveries are more apparent than real, for at the end of two, or even three years, I have found that these so-called cures again suffer a relapse, and often succumb suddenly to Cerebral or Cerebro-spinal lesions (due to Syphilis), and this I have noticed amongst those castrated, as well as amongst the stallions.

On this head the present work is particularly interesting; in 1886 twenty-six stallions were attacked at Blidah; one of them, Pacha, died the 3rd Sept., after having been considered cured; the stallion Berd equally appeared to be cured under the hydropathic system, when "Paralysis, the precursor of death, showed itself suddenly." Again, the stallion No. 990 gave us hope of a "radical cure," but Meningitis supervened. To sum up, of these twenty-six stallions, sixteen died, four were sold after castration, and six appeared to have recovered. It remains to be known what was the ulterior fate of these last-mentioned animals.

II.—*History of several stallions which were either cured or died from Syphilis* (1886).

1st Case. Acute Syphilis; death.—In a troop horse recently convalescent from Bronchitis, it was noticed that the penis was pendent, flaccid, and of a scarlet hue; this was followed by the appearance of a cutaneous eruption, with the other and ordinary symptoms incidental to Syphilis. Death soon supervened. The autopsy, only briefly described, showed the usual lesions

of the disease. There was no sign, however, of chancre or ulceration on the penis, nor in the urethral canal.

2nd Case. Chronic Syphilis; death.—A stallion arrived on the 22nd June with a pendulous penis and œdema of the scrotum. A small wound, which M. Blaise attributed to a finger-nail scratch, existed on the anterior surface of the penis; five days after, this wound had healed. Arsenic, with potassium iodide and a generous diet, were employed. On the 22nd September (more than three months after invasion) the general condition was satisfactory. It was castrated on September 28th, and this operation, according to M. Blaise, hindered the cure, and later even occasioned death (4th December), in provoking, without any doubt, a fresh attack of the malady.

3rd Case. Chronic Syphilis; cure (?)—The stallion Daouï showed on May 21st, 1886, the characteristic signs of Syphilis, both on the penis and on the skin. The penis was swollen, and of a purplish hue, but there was an absence of ulceration. By the 25th September the animal, which had passed through all the usual phases of the disease, might be considered cured. During the first fortnight in October, there was a fresh appearance of the cutaneous eruption. It was castrated on the 28th October, and the operation again gave rise to a cutaneous disturbance. On the 7th March, 1887, the patient seemed definitely cured, and it was decided to continue his training for one hour daily until he was sufficiently advanced to go into the ranks as a trooper.

4th Case. Chronic Syphilis; death.—Date of diagnosis, 22nd July, 1886; death the 23rd September, after showing the usual train of symptoms. At the *post-mortem* inspection, amongst other lesions, the articular surface of the right astragalus was found denuded, and the pubio-femoral ligaments were softened and black; but there was no sign of cicatrices on the urethral mucous membrane; bones, fragile. There were characteristic lesions throughout the tissues and viscera, and particularly in the ganglionic and cerebro-spinal systems.

5th Case. Chronic Syphilis; death.—June 7th, date of diagnosis. No ulceration on the penis, but progressive œdematous engorgement of the sheath, with cutaneous eruption, denoted the existence of the disease. On October 13th the patient was in such a condition that destruction was ordered. The lesions were chiefly confined to the spinal cord, and especially its ganglia.

6th Case. Acute Syphilis; death.—The stallion Jabert was attacked with Syphilis early in July. Treatment with arsenic and strychnine produced a notable improvement; but later general paralysis showed itself, which resulted in death on September 3rd. *Post-mortem* examination:—The kidneys were extremely congested, the right weighed 1,305 grammes, and the left 1,280. The urine found in the bladder was highly albuminous. No trace of ulceration in the genital organs.

7th Case. Acute Syphilis; death.—Horse 990 was brought from Aumale to Blidah on 21st July. No trace of chancre, but the ordinary symptoms of Syphilis were well established. On the 1st September it was attacked with vertigo, death supervening on the 16th September. Autopsy: Nothing of interest to record.

8th Case. Chronic Syphilis; death.—Date of attack, June. Castrated on October 13th, after treatment with arsenic, strychnine, iodide of potassium, and calomel. The operation aggravated the disease, but at length (March 13th) it appeared to be cured; soon after this, serious symptoms manifested themselves, but disappeared suddenly, as if by enchantment, and without treatment. M. Blaise hoped for a definite cure, but a relapse occurred, followed by death (August), sixteen months after the first invasion of the disease.

9th Case. **Chronic Syphilis; cure (?)**—Date of attack, July, 1886. Treated with arsenic, soda arseniate, strychnine, and laxatives, associated with a full and generous diet. On the 30th August it was considered on the high road towards recovery. On the 13th October following it was castrated; the operation occasioned a return of the lameness, together with the cutaneous eruption. On the 12th November the patient was sold, being at the time in good condition, but still lame, and showing the skin eruption. In such a state one could not say that the horse was cured.

10th Case. Acute Syphilis; death.—Date of invasion, 1st September, 1886. This horse quickly grew worse, and was destroyed on the 14th October. At the autopsy no chancres, or even cicatrices, could be found; tubercles were evident in the lungs; vertebræ very brittle.

11th Case. "Slow" Syphilis; destroyed.—Date of attack, 25th July. No sign of chancres; castrated October 28th; the operation caused a relapse, from which the patient partially recovered; but as it lingered on, it was destroyed as incurable in July, 1887.

12th Case.—Scherid was attacked in July, 1886. In the following February M. Blaise believed it cured. On the 2nd March, however, it lay down, never to rise again, and on the 10th it died in the last stage of Marasmus. The chief lesions found, on *post-mortem* examination, were found in the brain and spinal cord and their envelopes.

To sum up, M. Blaise presents to our notice twelve cases of Syphilis, but without one single authentic cure, which it is important for us to remember; and it is also necessary to remark that there was a total absence of chancres or cicatrices, symptoms which are very prevalent in Syphilis of the human subject, but which although recognised as having an existence in the horse and mare, are still of very infrequent occurrence.

The temperature in each case was carefully recorded; it oscillated between 39° and 41° Centigrade.

It is worthy of notice, that in every horse castrated there was a renewal or aggravation of the symptoms for a time, even so far as to occasion the death of the subject.

III.—*Venereal Diseases.*

M. Blaise divides diseases of venereal origin into two classes, viz.: Genital exanthema (Hering), a mild and local affection; and Syphilis, a general and usually fatal disease.

"Genital exanthema," M. Blaise tells us, "is an eruptive disease, which appears in stallions and mares during the spring, and disappears in the course of from ten to fifteen days, without leaving any traces behind it. The system is not subjected to any ill effects, and the malady cures itself without treatment, although cleanliness and astringents hasten the cicatrisation of the ulcers by which it is characterised. The ulcer commences as a small rose-coloured spot of a somewhat deeper colour at its periphery. This lenticular patch is soon transformed into a pimple, which, at three, or at most four days after its appearance, becomes a papule or vesicle of the size of a pea or small nut; from the fifth to the sixth day, this papule softens, and a sero-purulent liquid issues from its umbilicated summit, which concretes under the action of the air into a greyish crust, covering a small cup-shaped ulcer with a granulated base, rose-coloured at its margins, and paler towards the centre. The sore cicatrises from the twelfth to the fifteenth day, and leaves behind a cicatricial pale spot, involving the thickness of the mucous membrane." These symptoms are exactly described; they would have been so much the more so had M. Blaise been aware of the works of MM. Peuch, Trasbot, and Galtier on this disease, to which it is here expedient to give the proper name, viz., "Genital Horse-pox," just as it is necessary to give the name of pustule to the erup-

tion, discrete or confluent, by which the malady is accompanied. Since 1876 M. Blaise has successfully inoculated with the products of "Genital Horse-pox" the lips of two foals. In 1886 he again renewed the experiment with a four-year-old horse and an eight months' old calf; on these two animals he obtained a most marked pustulation.

According to our colleague (M. Blaise), many veterinary surgeons, especially in Algeria, have met with Syphilis, but have confounded it with a simple exanthema of the genital organs. These are very regrettable errors, and he attributes them to the fact that several authors, amongst others, Zundel and Laquerrière, had assimilated horse Syphilis with human Syphilis. Without making further comment on this point, I regret in anyway to have been the means of causing an error in diagnosis. It is true that formerly I was of the opinion that the two affections were identical, but at the present time, without denying this error, I am convinced, although there is a great analogy between the two diseases, there are, nevertheless, two separate morbific germs which closely resemble one another in their effects.

The question that there may be even identity or simple analogy between equine and human Syphilis, does not appear to me to have anything to do with the resemblance of the lesions of "Genital Horse-pox" and the ulcerations which accompany equine Syphilis. In the first place, syphilitic ulcers rarely become confluent in the horse; they are for the most part solitary and sparsely distributed. In "Genital Horse-pox," on the contrary, the pustules or sores, which are occasioned by the friction of the parts on one another, or even by coition itself, are always numerous as well as discrete. In the mare they often invade the exterior of the vulva and the perineum, and it does not appear to me that a careful observer would be likely to confound the umbilicated pustule of Horse-pox with the ulcer or chancre of Syphilis. If, however, any confusion should arise, inoculation of other horses, and especially young cattle, with the products of either disease would with certainty decide the question.

MM. Saint Cyr, Peuch, Trasbot, Nocard, and Galtier have mapped out the rules which must serve as a guide on this point; and in the interests of the Government, threatened as it is by the loss of its stallions, as well as in the interest of horse-breeding in Algeria, it would be very desirable that extracts from the best works relative to the diagnosis between Syphilis and Horse-pox should be issued as a pamphlet, and distributed among both the civil and military practitioners in Algeria. To sum up: two principal diseases, which must not be confounded, attack the genital organs of stallions and mares; that is to say, Syphilis and Horse-pox: the term "Genital Exanthema" has had its day, but must now be definitely replaced in the nosological vocabulary by "Genital Horse-pox."

IV.—*Syphilis (Dourine, Arabic).*

This fourth chapter constitutes the most important part of M. Blaise's work. It commences by enumerating and examining the various names under which the disease is known, but that which is most appropriate is "Equine Syphilis," from the incontestable analogy that it bears to human Syphilis, and from the fact that it at once calls to mind the specific nature of the malady, its origin, and its gravity.

M. Blaise agrees with Dr. Vital (author of an excellent monograph on equine Syphilis), that the disease is of great antiquity and has been known to the Arabs for many centuries, and that both in the time of the Crusades and since then it has often been imported into Europe from the East, causing more or less havoc amongst horses.

Horses and their hybrids contract the disease by sexual intercourse. It is seldom that geldings or virgin mares suffer from it, and then, of course,

only by accidental inoculation of the virus; although the subcutaneous injection of the blood taken from syphilitic subjects has also given positive results. M. Blaise has likewise inoculated dogs, cats, guinea-pigs, and rabbits with the blood, lymph, urine, saliva, and spinal cord of horses suffering from Syphilis, but without any real success.

It has been asked if the disease under consideration might not be a special manifestation of Glanders, and to settle this point a glandered mule was inoculated with syphilitic products and contracted the malady forthwith.

The author further asserts that the disease cannot arise spontaneously, but that it proceeds from sexual intercourse. It is not a nervous affection, as some writers have suggested, which has its origin in softening of the spinal cord from overwork of the generative apparatus; neither has it an origin in the transmission of infective material from the chancre of a syphilitic attendant.

On this last point M. Blaise has made several interesting experiments; among others, he has inserted into the subcutaneous cellular tissues of two horses, pledgets saturated with syphilitic pus; these pledgets remained in position for twenty-four hours without causing further disturbance than a small local abscess; again, he has inoculated the clitoris of a she ass on heat, with the simple result of an erythematous patch, which speedily disappeared. Assuredly other and more detailed experiments are necessary to prove the non-transmission of human Syphilis to the horse; yet the foregoing experiments are sufficient to overthrow the assertion of M. Merche, who brought to notice the contamination of an ass by its inoculation from a syphilitic native. We are aware also of the attempts to reproduce it in the pig and monkey, but without positive results; and we are thus forced to renounce our former theories on the transmissibility of Syphilis to the lower animals.

M. Blaise goes on to describe minutely the symptomatology of the affection in the horse and mare. He recognises acute, sub-acute, and chronic forms, but this division appears to me unnecessary, seeing that those cases described by him as acute did not die sooner than from three to four months after invasion.

The symptoms laid down by him are those related by several other authors on this subject, notably MM. Viardot, Laquerrière, Sipierre, Saint Cyr, Trasbot, Galtier, and Rollet; and as it is insisted on by him that three forms should be noted, we will agree to so subdivide the disease; recollecting, however, that Syphilis is generally of long duration, with periods of remission, that often lead one to expect a cure. M. Blaise thinks that all the afore-mentioned forms are ushered in by lameness of one hind extremity, usually the right; but I (Laquerrière) am forced to the opinion that the primary symptoms are localised in the genital organs, and that the lameness, together with the Arthritis of the joints, muscular pains, and other symptoms, belong to the second stage of the disease, at which time the poison becomes generalised throughout the system.

M. Blaise then proceeds to describe the pathological anatomy, as well as the microscopical researches which he has attempted; he has examined the sebaceous matter contained in the prepuce, and has found therein micrococci, numerous bacteria, and bright shining bodies that he has taken for spores. In the laboratory we must prosecute our researches with other material than the sebaceous secretion, that is to say, with the serosity within the cutaneous eruptions, which is readily obtained by puncturing with a fine trocar; this liquid should be cultivated in various media. If these cultures succeed, it then becomes interesting to note the results accruing from the inoculation of others of the horse tribe.

The contents of the small vesicles situated on the penis and the mucous membrane of the vulva during the acme of the disease, should also be the object of special cultures.

Regarding Syphilis as found in the mare, the author tells us "that it runs

through the same course as in the stallion." The cutaneous eruptions are characteristic; the weakness of the loins, the sero-mucous discharge, sometimes sanguineous, the brick-red violet marbling of the vulvo-vaginal membranes, and the œdema of the margins of the vulva, are symptoms impossible to confound with the conditions noticed during the period of "season." In the mare, Syphilis progresses rapidly, although some authors affirm (wrongly) that it is of less gravity than in the male. The former is, however, less resistant to its attack, and the sooner succumbs; abortion is followed by paralysis, and it is rare to find a syphilitic mare six months after the "covering season." This opinion, put forward by M. Blaise, is in opposition to the ordinary accepted idea, and for this reason the attention of veterinary surgeons should be specially directed to this point, on which science has not yet been able to arrive at a clear or definite conclusion; for it is in females more particularly that the malady may escape observation.

That which, however, is true, is that Syphilis in either sex is a dire affection, killing, as it does, the majority of those attacked. Death supervenes "often at the moment when one is hoping to effect a cure, after having cost in attendance and medicine perhaps two or three times the value of the patient."

M. Blaise refers to a statement made by me many years ago, that Glanders might complicate Syphilis. Assuredly Glanders can attack a syphilitic subject, but it is less a complication than the arrival of a fresh disease on the scene, running parallel with the original one, and solely due to the fact of the infection of the patient with the Glander bacillus; for both affections are distinct, and neither can arise spontaneously.

As to treatment, M. Blaise recalls to our minds the specifics which the human physician can bring to his aid; but the remedy for Syphilis in the horse has yet to be discovered; every possible means have been employed by him without success. The author closes his work with the sanitary considerations necessary, especially those applicable to stallions that travel the country; he reviews the instructions laid down in the Veterinary Police regulations, relative to the orders given to those in attendance on stud horses before leaving for their stations, viz. :—

1. That a certificate of health be required from the veterinary surgeon of the depot, or other qualified civil or military practitioner;

2. To examine carefully the mares about to be served, with a view of ascertaining that the genital organs (vulva, etc.) are in a healthy state; to wit, that there be an entire absence of excoriations, pustular or vesicular eruptions, lenticular spots, or any marbling or discolouration of the mucous membranes, to refuse service to emaciated animals, or those suffering from nasal gleet;

3. To feel the lips of the vulva and to refuse service should they be œdematous;

4. Not to accept mares that are weak in the loins, lame in one hind limb, especially the right, or that roll in the gait;

5. The vulva to be washed with clean water by the hand, avoiding sponges, as they could be the means of propagating Syphilis;

6. To anoint the lips of the vulva with olive oil before allowing mares to be served;

7. To properly cleanse the prepuce of the stallion;

8. To properly examine the penis before service;

9 To take note of any symptoms which might lead one to suspect an attack of Syphilis; *e.g.*, excoriations or ulcers on the penis, œdema of the scrotum, lameness behind, or eruptions on the skin;

10. To prevent the employment of stallions showing any of the foregoing symptoms;

11. To wash the penis with clean water after service.

These instructions, which have been added to the laws of Sanitary Police, will certainly sooner or later cause the disease to be eradicated from our possessions in Northern Africa ; for as the malady is propagated by a *specific* virus, it is the more necessary to avail ourselves of all the prophylactic measures at our disposal.

Castration is no doubt useful, though the slaughter of animals directly the disease is diagnosed would in the end be the most economical for the State.

It has been proposed, in the case of mares, to artificially occlude the vulva, but M. Blaise considers that this operation is not sufficiently practicable. Latterly, M. Trasbot has advocated spaying all mares which have suffered from Syphilis ; but undoubtedly slaughter is the best method of disposing of them, on the understanding that the owners be indemnified.

In spite of the excellent measures adopted in Algeria, the Arabs, it is well known, will seldom if ever declare the existence of the disease, and will, on the other hand, allow suspected, or even affected mares, to be covered by their own stallions ; and, moreover, it is to be feared that mares recently covered by syphilitic horses may be brought to the stallions of the State Depots, and so in this manner cause the infection of the latter. The foregoing is an analytical *resumé* of M. Blaise's work, which merits great attention, as being the outcome of the researches of a highly-intelligent scientist ; he has endeavoured with much thoroughness to throw more light upon a malady which still requires the labours of other observant and practical men for its further elucidation.

Discussion.

M. TRASBOT : I will profit by this opportunity to recall to your notice the article published by me in the *Archives Vétérinaire*, on a certain number of points discussed also by M. Blaise. I attempted to inoculate both the horse and ass with Syphilis, without however obtaining any success beyond the formation of a small abscess, which disappeared without causing further inconvenience. I have seen the animals experimented on by M. Blaise, and I have remarked the similarity of the symptoms to those obtained by myself. There is, therefore, no actual identity in human and horse Syphilis, although they offer great analogy. Dr. Fournier examined both the stallions and mares which had been under my treatment for Syphilis, and found the greatest resemblance in the lesions in these animals with those in man ; the sores on the mucous membranes and the chancres especially.

As to contagion, I have gathered many facts tending to prove that the disease can only be propagated during the time that the characteristic lesions are present. As to complete cure, I believe that it can be obtained, though not without exceptions ; affected stallions and mares should be castrated and spayed to annihilate their reproductive powers. I have established that exanthema of the genital organs is nothing else than Horse-pox, localised in those parts, and this is important in aiding our diagnosis, for the chancre of Syphilis is single and isolated usually, whereas the false chancres of Horse-pox are numerous, and they are accompanied by engorgement of the neighbouring lymphatics.

M. LEBLANC : In the absence of M. Nocard, I deem it my duty to communicate the facts gathered by the Committee on Epizoötic Diseases. Too often veterinary surgeons confound Horse-pox with Syphilis, and in addressing their reports to the authorities cause much prejudice to breeders and to the exportation of horses generally, by localising centres of infection of this dreaded malady which do not in reality exist ; these reports are published in the papers, and hence are the means of originating alarms as unnecessary as

uncalled for. To this, in great measure, is due the fact that latterly the Americans have attributed the appearance of Syphilis amongst their stallions to an importation from this country: and this is the greater error, seeing that the disease does not exist in France. To avoid such errors in the future, the Minister of Agriculture has ordered that veterinary surgeons shall henceforth isolate all suspected animals in order to ascertain the existence of the infection, before making a definite report thereon. On several occasions the Committee on Contagious Diseases has occupied itself with this question, and recently has issued an official circular note indicating the characteristic symptoms of Syphilis, and pointing out the very great loss that must accrue to breeders, if errors in diagnosis are committed.

Reviews.

History and Pathology of Vaccination. By Edgar M. Crookshank, M.B. (London: H. K. Lewis, 1889.)

Mr. Crookshank has devoted two large volumes to the subject of vaccination, a subject which is always of great interest and importance from a sanitary and pathological point of view; and so far as its historical bearings are concerned, he has brought together all the facts connected with its introduction into general practice in such a way as to obviate further research in this direction, while he has given his assistance in dispelling the strange error which has for so many years clung to the medical mind, that Small-pox and Cow-pox are due to one and the same cause.

In this preface he informs us that he had devoted himself for some time to pathological researches in connection with the communicable diseases of man and the lower animals, when the discovery of an outbreak of cow-pox in 1887 led him to investigate the history and pathology of that affection. At that time he accepted and taught the doctrines, in reference to the disease, which are commonly held by the medical profession, and are described in their text books of medicine. In endeavouring to discover the origin of this outbreak, he says that it was proved beyond question that the cows had not been infected by milkers suffering from small-pox. "This fact, together with the clinical characters of the disease in the cows, and in the milkers infected from the cows, and the certainty that I had to deal, not with an infectious disease like Cattle Plague or Pleuro-pneumonia, but with a disease which is communicated solely by *contact*, convinced me that the commonly accepted descriptions of the nature and origin of cow-pox were purely theoretical. As the natural cow-pox had not been investigated in this country for nearly half a century, it was obvious that a much neglected field of comparative pathology had been opened up for further inquiry." After studying the literature of vaccination and variolation, and becoming deeply impressed with the small amount of knowledge possessed by practitioners concerning cow-pox and other sources of vaccine lymph, and with the conflicting teachings and opinions of leading authorities, in both the medical and veterinary professions, he visited France in 1888. Among other persons whom

he mentions as having interviewed, he speaks of our colleague, M. Cagny, of Paris, and M. Peuch, the distinguished Professor of Veterinary Pathology at Toulouse, who furnished him with "the details of his remarkable investigations into Horse-pox." "M. Peuch's researches and observations will be of the greatest value in bringing to light a disease of the horse which is still unrecognised by practical veterinarians in this country."

We have dwelt thus lengthily on the preface to Dr. Crookshank's book, as it gives the motives for its production, and also because in it, as well as in the body of the work, he has made no mention whatever of what has been done to elucidate the subject by veterinary surgeons in this country. He has omitted to mention that for years we have combated the erroneous notion which he confesses has been, and is now, entertained by medical men, as to the Cow-pox being only Small-pox transformed in the body of the bovine; since the commencement of this Journal the error has been pointed out over and over again; and in the pages of the *Lancet* we published a long article on Human and Animal Variolæ (which was republished here, and also in pamphlet form in 1881). In Veterinary Sanitary Science and Police are sections dealing with Cow-pox and Horse-pox, which we believe are tolerably complete and correct; and some ten or twelve years ago we chronicled an outbreak of the last-named disease in the Second Life Guards.

So that Dr. Crookshank's statement as to lack of recognition of Horse-pox by English veterinarians is not well founded; while for at least ten years the non-identity of Small-pox and Cow-pox has been insisted upon by at least some of them.

The chief feature in these volumes is the large number of valuable documents they contain, which deal with the history of vaccination, and they will form a most useful store-house of references to those who are studying such an important subject. There are numerous well-executed plates which render the work much more useful, and will greatly help the student and practitioner, whether of human or veterinary medicine.

THE LIVE STOCK JOURNAL ALMANACK FOR 1890. (London: Vinton and Co.)

This is another of the wonderfully cheap seasonable publications which interest and inform a wide class of readers, and give reliable references for a whole year. This Almanack, however, stands in the very front rank, and at the top of the rank, for merit and "get-up," and the one for the present year is certainly not a wit inferior to that of preceding years, and that is saying a great deal. There are special articles by Earl Cathcart, the Marquis of Huntley, Mr. Burdett Coutts, Mr. Gilbey, Dr. Fleming, Professors Henry, McCracken, and Sheldon, and a host of other well-known writers, on breeding, rearing and feeding all the various domesticated animals; information with regard to Shows and Societies; and a mass of other cognate matters which space cannot allow us to mention, while the book is adorned with a number of good illustrations.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD JANUARY 9TH, 1890.

The President, Professor AXE, in the chair.

Present:—Professors Brown, McCall, Walley; Sir Henry Simpson; Dr. Fleming; Messrs. T. Greaves, P. Taylor, H. Kidd, J. Roalfe Cox, F. W. Wragg, W. Wilson, W. J. Mulvey, J. Simpson, T. Campbell, J. D. Barford, H. R. Perrins, W. Hunting.

The SOLICITOR (Mr. Thatcher), in the absence of the Secretary through illness, read the notice convening the meeting.

THE SOLICITOR announced that letters expressing regret at inability to attend had been received from Professor Williams, Professor Pritchard, Mr. Wood, Mr. Whittle, Mr. Lambert, and Sir Frederick Fitzwygram.

Presentations.

The SOLICITOR announced the following presentations to the library:—The 'Calendar of the Royal College of Surgeons, England'; 'Equine Medicine,' by Professor Robertson, presented by his widow; and Volume I. of the *Veterinary Record*, presented by the Editor.

Mr. TAYLOR moved that the thanks of the Council be presented to the donors for the books.

Mr. GREAVES seconded the motion, which was agreed to.

Letter of Condolence to the Widow of the late Mr. E. C. Dray.

Dr. FLEMING thought that before they proceeded further with the business of the College, it would be an act of kind remembrance and recognition if they noticed the loss they had sustained in the death of Mr. Dray. He felt sure that he carried with him the sentiment of the whole profession in saying that both the Council and the profession had sustained a heavy bereavement in the loss of Mr. Dray. For many years he had been a constant attendant at their Council meetings, and had held the responsible position of Treasurer, and he had fulfilled the duties pertaining to that office with the fullest satisfaction to the profession. He therefore begged to move that a letter of condolence be sent to Mrs. Dray, expressing the extreme regret which the profession felt at the loss it had sustained, and also desiring that the sympathy of the Council be tendered to her in her heavy bereavement.

Mr. GREAVES seconded the motion.

Professor WALLEY supported.

The motion was unanimously agreed to.

Report of Registration Committee.

The SOLICITOR read the report.

Mr. BARFORD moved its adoption.

Dr. FLEMING seconded the motion, which was agreed to.

Report of the General Purposes Committee.

The SOLICITOR read the report.

Professor WALLEY moved the adoption of the report. He also begged to move that Mr. Greaves' very kind offer to double the window of the Council chamber be accepted. Judging from what he knew of the effect of such an alteration, he thought it would be of the greatest possible advantage to the acoustic properties of the room.

Mr. BARFORD seconded the motion, which was agreed to.

Report of the Finance Committee.

The SOLICITOR read the report.

Dr. FLMING moved its adoption, and also that cheques be drawn to cover outstanding liabilities.

Mr. TAYLOR seconded the motion, which was agreed to.

Report of Committee re *Government Grant and Meat Inspection.*

The SOLICITOR read the report.

Mr. HUNTING protested that the motion passing the recommendation *re* Government grant was never seconded, and therefore it could not be a resolution. There were only three members present at the meeting; two disagreed and the Chairman gave the casting vote.

Sir HENRY SIMPSON said that Mr. Hunting had not lodged any formal objection with the Secretary.

The PRESIDENT said that the only satisfactory mode of procedure would be to refer the matter back to the Committee.

Mr. TAYLOR then moved that it be referred back to the Committee.

Mr. CAMPBELL seconded the motion, which was agreed to.

Mr. TAYLOR moved that the portion of the report referring to meat inspection be adopted.

Mr. CAMPBELL seconded the motion, which was agreed to.

Report of Committee re *recognition of Foreign and Colonial Schools.*

The SOLICITOR read the report.

The PRESIDENT said that by Section 13 of their Act, if they recognised foreign and colonial schools, graduates from such schools were entitled, after having been in practice for a certain number of years, to register their names at the College and to become to all intents and purposes members of the Royal College of Veterinary Surgeons. Of course that depended upon the Royal College having recognised the school whose graduate sought to be registered. In Bye-law 35 it was provided that a person holding a diploma from any medical examining body recognised by law, shall be exempt from attendance in the first year's course of lectures, and from the examination at the end of that year. "A student holding a foreign or colonial veterinary diploma from any veterinary examining body recognised by the Council of the Royal College of Veterinary Surgeons shall be exempt from attendance of the course of lectures for the first two years, and from the examination at the end of those years respectively." Up to the present time it had been the practice of the schools to receive graduates from foreign and Colonial schools, and to allow them the privileges laid down in the Bye-law, according to which they might study one session at one of the colleges, receive the diploma, and be registered as members of the Royal College of Veterinary Surgeons. The schools had evidently been going astray, as the Bye-law said that intending graduates should be from recognised schools. Until the Council recognised the foreign and Colonial schools, the schools in this country could not allow them the privileges provided in the Bye-law.

Mr. ROALFE COX proposed that the word "recognised" should be left out in the Bye-laws.

Professor WALLEY thought that if that omission was made the profession would be swamped with Colonial veterinary practitioners.

Sir HENRY SIMPSON said that up the present the Royal College had recognised these Colonial students, and the schools had on that understanding taken them with their diplomas and passed them on to the College for their diploma. It seemed to be the desire of the Committee, and, he imagined, of everybody, that that should be put an end to. He thought they had better adopt the recommendation of the Committee.

Professor McCALL suggested that an official letter should be sent to each of the principals of the schools, intimating that for the future no Colonial graduates would be allowed to be examined. As for the few Colonial students who were now studying in this country, they should be allowed to run their course and come up for examination in their due time.

Dr. FLEMING thought that the Bye-laws should stand, and that those graduates who wished to become members of the Royal College of Veterinary Surgeons be allowed to enter the schools as heretofore, but the schools must be recognised ones. He thought it would be invidious to mention the recognised schools. It should be understood by the Royal College that only those schools whose curriculum was equal to its own should be recognised.

Mr. TAYLOR moved the adoption of the report as it stood, with the omission of the names of the colleges.

Professor WALLEY seconded the motion, which was agreed to.

Report from the Court of Examiners.

The SOLICITOR read the report.

Mr. TAYLOR moved the adoption of the report, and the motion was agreed to.

Appointment of Treasurer.

Dr. FLEMING proposed Mr. Wragg as successor to Mr. Dray. He had, he said, been already assisting Mr. Dray, and he knew well the state of the College finances, and how they were regulated.

Professor WALLEY seconded the motion, which was unanimously agreed to.

Mr. WRAGG thanked the Council for the great honour they had conferred upon him, and assured them that he would use his best endeavours to carry out the duties of the office in the same exemplary manner in which they had been carried out by his predecessor.

Election of Vice-President in the room of Mr. E. C. Dray.

Mr. J. SIMPSON thought that it would be a very graceful act if they did not fill up the vacancy in the list of Vice-Presidents caused by the death of Mr. Dray. It would be a graceful act on the part of the Council to a good man who had served the College for a considerable length of time. According to the Charter it was necessary for them to appoint a successor to the Treasurer, but that was not the case with the Vice-Presidents.

Dr. FLEMING seconded the motion. He thought it would be a very graceful act not to fill up the vacancy.

The resolution was unanimously agreed to.

Appointment of Auditors.

Mr. TAYLOR moved that the auditors, Messrs. Alfred Broad and Joseph Woodger, who acted the previous year, should be asked to act again.

Mr. WRAGG seconded the motion, which was agreed to.

Appointment of Committee to arrange Annual Report.

Mr. TAYLOR moved that the Committee be as follows: The President, Sir Henry Simpson, Dr. Fleming, and Mr. Roalfe Cox.

Mr. CAMPBELL seconded the motion.

Mr. WRAGG suggested the name of Mr. Hunting.

Dr. FLEMING thereupon wished his name to be withdrawn.

Mr. TAYLOR then amended his resolution as follows: The President, Sir Henry Simpson, Mr. Roalfe Cox, Mr. Wragg, and Mr. Hunting.

The resolution in its amended form was agreed to.

Appointment of the Body for the Examination of Students in General Education and fixing Fees.

The PRESIDENT said that the Council would remember that a motion had been carried to the effect that the examinations in preliminary education should be uniform in character, and that they should be performed by one body. Their present object was to appoint a body for that purpose.

Mr. WILSON proposed that the duty of examining the students should be placed in the hands of the College of Preceptors and the Educational Institute of Scotland jointly, and that they should have the power of examining all candidates who did not possess, or exempting certificates of having passed the previous matriculation examination. He thought it was much better that it should be put in the hands of a Joint Board. Then they would have a uniform examination throughout the United Kingdom; the fees to be such as the Joint Board were disposed to charge.

Professor MCCALL seconded the proposition.

Professor WALLEY pointed out that by this proposal they would gain the uniformity that they had all along desired.

Sir HENRY SIMPSON asked whether any sort of conference had been held, or whether any advance had been made to these bodies, so as to ascertain whether they were willing to act.

Mr. WILSON said he would amend his resolution, adding "if they consent."

Sir HENRY SIMPSON desired that some limit should be put to the fees.

The PRESIDENT thought it would be better that the matter should be left to a small committee.

Mr. WILSON'S motion was then carried.

Professor WALLEY moved that the fees be fixed, and that they do not exceed one guinea.

Mr. GREAVES seconded the motion, which was agreed to.

Professor WALLEY said that, so far as the Educational Institute of Scotland was concerned, he had every reason to believe that they would work heart and soul to carry out the wishes of the Council. He proposed that a committee be formed to confer with the two bodies.

Professor MCCALL seconded the motion.

It was ultimately arranged that Dr. Fleming, Mr. Barford, and Sir Henry Simpson should form the committee.

Professor BROWN suggested that steps should be taken to let men know when they had to come up for their examinations, where they had to go, and at what time. He thought that the date of the next examination might be fixed at once.

It was then arranged that the next examination should commence in London on the 14th and in Scotland on the 21st of May.

Notice of Motion by Mr. Kidd.

Mr. KIDD moved the following resolution, of which he had given notice: "That steps be taken to obtain a new charter for the purpose of consolidating and amending the existing charters and for other alterations." He said:—In proposing the resolution which stands in my name, "That steps be taken to obtain a new charter," I fancy that some objection may be raised against this step on account of the expense. It has been varicusly estimated to cost from £200 to £600, but those who have had some experience in this matter say that it cannot cost more than £300. Be that as it may, if a new charter will confer greater benefits on the body corporate, it will be money well spent.

It is necessary to have a new charter, because a large majority of those members of the profession who take an interest in its affairs, ask for certain reforms which cannot be instituted without the legal power.

The first and most important provision necessary in a new charter is to strengthen the clause in the original charter of 1844, with respect to the title of veterinary surgeons (see page 18 in Register of 1889), which says, "*and* we do further *declare* and *grant* that the veterinary art, as practised by the members of the said body, politic and corporate, shall be henceforth deemed and taken to be and recognised as a profession, and that the members of the said body, politic and corporate, solely and exclusively of all other persons whomsoever shall be deemed and taken and recognised to be members of the said profession or professors of the said art, and shall be individually known and distinguished by the name or title of veterinary surgeons."

It is very difficult to understand why those persons who are placed in the Register of the Royal College of Veterinary Surgeons as "Existing Practitioners," have been permitted to use the title of veterinary surgeons. There is not a single line or clause in the Veterinary Surgeon's Act which takes away from the members of the body, politic and corporate, the exclusive right to the title of veterinary surgeon, granted in 1844, but on the contrary, the Act confirms that charter, and that special clause in the charter. The preamble to that Act distinctly says, "whereas it is expedient that provision be made to enable persons requiring the aid of a veterinary surgeon for the cure or prevention of diseases in, or injuries to horses, and other animals, to distinguish between qualified and unqualified practitioners." Section 13 clause 3 makes the distinction clear (see last seven lines) "a recognised veterinary diploma is a veterinary diploma recognised for the time being by the Council of the said Royal College, as furnishing a sufficient guaranty of the possession of the requisite knowledge and skill for the efficient practice of veterinary surgery, and as entitling the holder thereof to practice veterinary surgery in the British possession or foreign country wherein the diploma was granted." Section 14 confirms the original charter. Section 15, clauses 1, 2, and 3, provides for the registration of "Existing Practitioners." Section 4 expressly states "No person registered under this section shall be deemed to be a member of the said Royal College within the said charters, or this Act," and consequently cannot use the title of veterinary surgeon. Section 17 makes a further distinction by designating those qualified as "veterinary surgeons," and those registered "existing practitioners" as "veterinary practitioners," it is therefore clearly the duty of the Council of the Royal College of Veterinary Surgeons to see that none but the members of the body, politic and corporate, are permitted to use the title of veterinary surgeon.

The next point to which I desire to draw your attention, is the desirability of abrogating that disfranchising clause in the charter of 1876. I refer to clause 9. It is unnecessary that I should take up your time by repeating what has been so clearly advocated on this clause in the veterinary journals by different members of the profession. Up to the present moment not one valid reason has been advanced in support of the step taken by the council in that year for taking away the privileges which members of the body, politic and corporate, had enjoyed for 32 years, and it would be an act of justice on the part of the present Council to restore to those members of the profession the rights and privileges of which they were then deprived. If clause 9 had been made prospective instead of retrospective, I am quite convinced there is not a member who would either have spoken or written against it.

The time has come in the history of our profession when it is imperative to make a distinction between Members of Council and Members of the Examining Board. The former must possess complete control over the affairs of the profession, subject to the vote of its members. The latter must be separate and subordinate to the former. I have heard an examiner ask why disfranchise them? I fail to see that this can by any stretch of imagination

be called disfranchisement, because they have the right and privilege of choosing whether they prefer to serve the body corporate on the Council (if elected), or serve the Council as examiners.

The arguments which have been adduced in the discussion of this subject, in the professional journals in favour of the abolition of the "dual appointment" are so conclusive and unanswerable, that I need not further refer to the subject.

Circumstances have occurred of late years in the selection of Vice-Presidents that it is worth while considering the advisability of altering the method of their election. The abuse of any privilege or power frequently renders it desirable to seek for a remedy. I do not think that any one will deny that the honour which was at one time associated with the election of a member of the profession as a Vice-President has departed because it has now become exclusively the retreat for candidates who have been rejected at the annual election. Now in my humble judgment it would be the means of strengthening the hands of the Council, adding dignity to it, and a source of gratification to the body corporate if all members of Council (other than those to whom I shall presently refer) be elected by the profession, and that Vice-Presidents be elected by the Council from its own members.

The next subject which I desire to submit for your consideration in connection with the proposed new charter I freely admit has not been so fully discussed by the profession as those already referred to. I am of opinion that the Principal of each Veterinary School, the Principal Veterinary Surgeon to the Army, the Veterinary Adviser to the Agricultural Department of the Privy Council, and the Chairman of the Board of Examiners should be ex-officio members of Council in virtue of the respective offices they hold.

There is yet one important provision which would tend more than anything else to elevate the status of the members of the body corporate. but whether a clause can be inserted in a charter, conferring full power, and carrying penalties, is a question for our legal adviser to decide. I refer chiefly to members of the profession who are guilty of unprofessional conduct, such as the publishing of recipes for the cure of certain diseases, and giving advice in agricultural papers and publications. Let us follow the example of the medical profession in this respect, and make coverture a punishable offence, and we too will rise in the social scale and will take a position which will soon command respect. If such cannot be done by charter then let us ask for an Act of Parliament.

I will merely mention one more step which, in my opinion, would greatly tend towards uniting and strengthening the profession, but I fear it is premature for adoption. I allude to dividing Great Britain and Ireland into districts, and elect a representative from each district on the Council.

In conclusion, let me ask you to avoid following the example of some in a larger legislative assembly in criticising men, not measures. I have no other motive in bringing this matter before you than that of furthering the best interests of the profession, and of fulfilling the pledge given at last election. If you are satisfied that a new charter on the lines indicated will prove beneficial to the body Corporate, I ask for your co-operation in obtaining it; but on the other hand, if you are convinced that it will prove detrimental to the best interest of the profession, then I ask you to vote against the resolution which I now propose: "That steps be taken to obtain a new charter."

Mr. MULVEY seconded, but thought that the matter should be put into the hands of a committee to consider the advisability of altering the charter.

Mr. JAMES SIMPSON thought that if the matter was to go beyond that day, the best committee to consider it would be the Parliamentary Committee already appointed.

Mr. ROALFE COX proposed that the matter should go no further. It would

be a great expense, and it was not very promising. He thought, too, that they should be extremely careful how they dealt with the College funds.

Professor WALLEY asked Mr. Kidd if he would not alter his motion that the matter should be referred to a committee.

Mr. KIDD said he would accept the suggestions that had been made, but he would not be in favour of handing it over to the Parliamentary Committee.

Professor BROWN thought that as none of the Council seemed to be very enthusiastic about the proposition, and as the committee had to be selected from the members of the Council, he did not quite see the use of adjourning the matter for an indefinite period. He also thought that the proposition would amount to an amendment of the Act.

Dr. FLEMING proposed that the question be decided at that meeting.

Mr. HUNTING said that although disagreeing with some portions of Mr. Kidd's remarks, he meant to support the resolution. He hoped the matter would be thoroughly considered by a committee appointed by the Council. He thought it would be a great benefit if they could have one charter instead of four.

Mr. GREAVES said that, as the charters had been consolidated by the Act of Parliament, and they could not alter an Act of Parliament by a charter, if they wanted to make any alteration they would have to get another Act of Parliament to override their present Act.

Mr. KIDD said that he did not for one moment think that any new charter would override the Act. What he did want to know was why the Act was not put into force in regard to titles.

Sir HENRY SIMPSON thought that most of the alterations proposed by Mr. Kidd were entirely against the spirit of the age.

Dr. FLEMING thought that members of the profession who agitated for alterations in the constitution of the profession should first well understand that constitution. The title of veterinary surgeon was never claimed as the exclusive right of the Royal College. Until the passing of the Act, even the title of Member of the Royal College of Veterinary Surgeons was not protected. In the House of Commons there was the very strongest feeling in favour of those gentlemen who had been in practice, and the House of Commons would have resisted any attempt to pass a Bill which excluded those gentlemen from the use of the title.

Mr. HUNTING moved an amendment that a committee should be appointed to consider the matter; this found no seconder.

The original motion of Mr. Kidd was then put to the meeting, and negatived by a large majority, only four voting in its favour.

Professor Walley's Notice of Motion.

Professor WALLEY moved the following resolution, of which he had given notice:—"That in the opinion of this Council the law as it relates to Glanders and Farcy requires to be materially amended, more particularly in reference:

"(1) To the general supervision of infected studs.

"(2) In reference to the slaughter of diseased animals.

"(3) In reference to the disposal of horses from infected premises."

He thought that the present regulations in reference to Glanders were very loose indeed. At the present time, when an outbreak of Glanders occurred, the attention of the Local Authorities was directed to it; but the man, if he did not choose to conform to the direction of the Local Authority, could keep his glandered horses for a matter of fourteen or twenty-one days, or even a longer time. The present regulations, too, with regard to the disposal of horses from infected areas left much to be desired. There was practically no supervision exercised over infected studs.

Mr. GREAVES seconded the motion, which was agreed to.

Notices of Motion.

Mr. ROALFE COX gave notice of his intention to move the following resolution at the next Council Meeting:—"(1) That, with the view to promote and maintain the dignity of the veterinary profession, this College take means to regulate the professional conduct of its members. (2) For the guidance of this College, that means be taken forthwith to ascertain what provisions, with regard to their members respectively, have been established by the Royal College of Surgeons, the Royal College of Physicians, the Society of Apothecaries, and the Pharmaceutical Society. (3) That means be taken forthwith by this College to acquire full power, if it has not now full power, to determine questions of proper professional conduct on the part of its present or future members, and power also to create and to enforce penalties for infringement or breach thereof."

Mr. HUNTING gave notice that he would move a resolution to the effect that the Council should arrange the hours as well as the day of examinations, so that, not only should the students be there at the proper time, but that the examiners should be there at the proper time.

Vote of Thanks.

Mr. BARFORD moved a vote of thanks to the President for presiding.

Mr. ROALFE COX seconded the motion, which was agreed to.

LINCOLNSHIRE VETERINARY MEDICAL ASSOCIATION.

MEETING at the Albion Hotel, Lincoln, on October 31, 1889. Present:—B. Freer, Esq., M.R.C.V.S. (the President), in the chair; Messrs. W. H. Brooks, Fulbeck; W. B. Dickinson, Boston; F. L. Gooch (Hon. Secretary), Stamford; J. H. Goodall, Melton Mowbray; J. W. Gresswell, Peterboro'; C. Hartley, Lincoln; F. A. Holmes, Hemswell; J. Mackinder, Peterboro'; T. J. Marriott, Bottesford; Capt. B. H. Russell (Treasurer), Grantham; J. Smith, Huntingdon; T. Smith, Market Rasen; also Professor Pritchard, M.R.C.V.S., London.

Letters of apology were received from Messrs. Greaves, Manchester; Clark, March; Hardy, Sleaford; Rudkin, Grantham; Holmes, Bourne; Howse, Lincoln; and Professor Walley.

The HON. SECRETARY brought forward the matter of the instruments belonging to the Association. On the proposition of Mr. Marriott, seconded by Mr. Mackinder, it was resolved that Capt. Russell be asked to take charge of them, and that any member requiring them should have them on loan, such member to pay the carriage each way. Capt. Russell undertook to take charge of the instruments.

An alteration of Rule V. was agreed to.

The HON. SECRETARY stated that he had only about six of the old books of rules left; would the meeting empower him to have the rules, as altered, printed, and a sufficient number of copies struck off to send a copy to each member and keep a few on hand.

Mr. GRESSWELL suggested that the matter be deferred until the annual meeting; other alterations might then be made in the rules.

It was resolved that the Chairman, Mr. Mackinder, Mr. Gresswell, and Mr. Gooch be a Sub-Committee to examine and suggest any necessary alterations of the rules to the annual meeting.

The CHAIRMAN said it was now his pleasing duty to introduce Professor Pritchard to deliver a lecture on

"Curb."

Professor PRITCHARD said: I will begin my remarks by thanking the Chairman for the manner in which he has introduced me to the meeting.

My principal object in selecting this one word, "Curb,"—I don't believe in long texts—has been to excite discussion, and I most fervently invite it upon the one point as to what a Curb really is. In ordinary parlance it is an enlargement of the back of the hock, about opposite or a little above the ordinary seat of Spavin. I have a view about the matter which I think is different to that of most people, and I want, if I possibly can, either to prove that my idea is a correct one, or to find from the arguments that you may advance that I am incorrect. To do this it will be necessary for me to make some few remarks with reference to the anatomy of the structures which are, and are said to be involved in this disease. To begin; if we slit open the skin at the back of the hock and remove the connective tissues there the first structure of any importance we come upon is a posterior annular ligament, and we find this extending, as you will see from the specimen I have here, from the lower part of the calcis for about four or five inches in a downward direction. It is attached to both sides of the bones of the hock, and binds down the whole of the structures, the tendons more particularly, which pass down the back of the joint. Passing from that for a moment, let me remind you that in connection with the hock we have some of the most powerful ligaments there are in the whole body. The bones of the hock, which you know are numerous, are so connected together by ligamentous structures that it is almost, in fact impossible, to separate them without having recourse to maceration or boiling. If, for example, the cuneiform medium and magnum—two of the central bones of the joint—be taken, I will defy anyone to separate them without fracturing the bones, unless he has recourse to boiling or maceration. Another ligament which is, I think, equally powerful, and one which I shall have to allude to, is one which runs from the back of the calcis to the cuboid bone and external metatarsal bone, termed the calcaneo-cuboid ligament. Passing again to this post-annular ligament, I may tell you that between it and the tendon there is a portion of synovial membrane, as we term a sheath. I must here allude to the different forms of synovial membrane we find in the body, because I shall read a quotation presently which bears upon it. A synovial sheath is a portion of synovial membrane placed between a ligament and a tendon, or between two tendons.

A synovial bursa, another form of synovial membrane, is a synovial sac placed between a portion of bone and a ligament or a tendon. Another form of synovial membrane we have is that which we find in free moving or diarthrodial joints. Let us exemplify this if we can. Between the perforans and perforatus immediately below the knee we have a synovial sheath. Perhaps the best specimen of a synovial bursa is between the middle tubercle on the anterior part of the head of the humerus and the tendon of the flexor brachii. There are scores of examples of synovial membrane in relation with diarthrodial joints, a good example of which we have between the inferior extremity of the scapula and the head of the humerus. We have passing down the back of this hock the perforatus tendon; close under this annular ligament over the body of the os calcis we have passing a perforans tendon, and underneath the two, inclined to the outer side, we have the so-called calcaneo-cuboid ligament. Between the perforans tendon and the body of the os calcis there is a large bursa. Between the perforans tendon and the structure immediately inside that is a synovial sheath, and between this post annular ligament and perforatus tendon is another synovial sheath. If I have thus briefly made myself clear to you on this portion of the anatomy of the hock, I think you will be able to follow me in what I have to say with reference to the opinions of others as to what a Curb is, and I think, perhaps, it will enable you to argue the point with me as to whether I am correct in my ideas as to what I think of the pathology of Curb. Some years ago I put myself to very considerable trouble to search out the ideas of men who have

written upon this subject. I have gone back as far as 1700, and I think I have read most of the opinions upon this subject, because I made it rather a special point with myself, from that day to the present. I am not going to trouble your minds with what they say beyond this, that none of them, although many of them get very close to it, entirely agree with my idea of the subject. I intend more particularly to deal with the men of our own time, men whose ability has been greatly based on their own research, and a knowledge of what has gone before them. I will begin by mentioning the name of one whom I am sure everybody in this room admired—the late Professor Spooner. He taught, and he and I have argued the point more than once, that Curb was a sprain of the annular ligament. Well now, I have dissected scores and scores of cases, and I have never yet seen the slightest thickening of the post-annular ligament in a case of Curb. It is true that its function—and a very important one, unquestionably—is that of binding down and keeping in proper position the tendons which pass down the back of the hock, and it is a very reasonable conclusion to come to, that the causes which we know give rise to Curb, may give rise to a partial laceration—for that is what we understand by a sprain—of the structure which is at the back of the joint; but my argument is, that no such laceration takes place, or consequent inflammation which would be set up in the structure. There is an enlargement; there is no question about that; your grooms will tell you there is an enlargement, and therefore there must be something to produce that enlargement, and if it were a diseased condition of the posterior annular ligament, I say that that diseased condition would give rise to a thickening of the structures, which we do not find on dissecting a case of Curb. Another opinion is of a man whom I esteem very highly, indeed; I look upon him as one of the most practical veterinary surgeons of the present day, I allude to Professor Williams. In his opinion Curb is a sprain of the calcaneo-cuboid ligament.

Now you will call to mind the strength and position of the calcaneo-cuboid ligament; it is one of the most powerful in the body, and the remarks I have made with regard to the post annular ligament will apply to this calcaneo-cuboid ligament; I have never yet seen it thickened; I have never yet seen it in a diseased condition, except from injury, such as a kick from a horse. I have never yet seen the slightest trace of disease in that ligament associated with Curb pure and simple, and if you examine the strength of it you will come to the conclusion that it would be an enormous effort on the part of the animal that could possibly injure it. It runs down the back of the os calcis. It is half an inch in thickness, and is firmly implanted into the cuboid bone, and is strong enough to hang a horse by. I am relying on my *post-mortem* examination as to my idea of Curb, and I cannot come to any other conclusion than that this ligament is not involved. And there is this that contradicts Professor Williams's argument more than anything else. The enlargement is not in the position of the calcaneo-cuboid ligament. We will pass from that to another opinion which I am rather inclined to think was borrowed from Professor Williams. I am alluding to the opinion expressed in the work "Horses and Stables," by General Sir Frederick Fitzwygram: "A sprain of the ligament which connects the os calcis with the cuboid and external metatarsal bones, or it may be a sprain of the broad annular (calcanec-metatarsal) ligament, which passes over and binds down the tendons in their passage down the back of the hock."

This opinion combines those of Professors Williams and Spooner, and having dealt with them I need not make any further remark about it. I should be rather inclined to think that the General, with all due deference to him, has not made many dissections of cases of Curb, or he would not have

come to such a conclusion. I now come to the opinion which is as nearly allied to that I hold as anything I have read; it is that advanced by Percivall. He says, "What we find is this: we first cut through the skin covering the tumour. This exposes the annular ligament, underneath which is the consolidated and thickened sheath, fibrous perhaps in composition, altogether changed in aspect and texture from what it was, and measuring, as I have seen it, *half-an-inch* across in solid substance. A Curb, therefore, might very properly be said to consist in hypertrophy of the *sheath* of the flexor tendons."

Here his anatomy, in my opinion, is wrong. If he had happened to have left out the word "tendons" I should have gone all the way with him.

Having dealt with the opinions, as to pathology of Curb, of some others, I will now endeavour briefly to explain to you what mine is. Between this post-annular ligament, which I have laid open this morning, and the back of the perforatus tendon there is a synovial sheath, and my view of Curb pure and simple, is that it is the result of an inflamed condition as a consequence of extravagant action of a portion of that synovial membrane, and in consequence of that inflammatory action an exudation takes place, which exudation produces the enlargement. That other structures become involved I have not a doubt. I have seen cases of Curb where the inflammation has extended to the tendons, and even involved the bones; but I am speaking now of Curb unconnected with any other disease. I don't know whether you would like me to say anything about the causes which give rise to Curb. They are as well known to you as to me. With reference to the treatment of the malady, I am of opinion there is nothing like burning a few spots with the pointed firing iron over the enlargement, and following up with blisters, allowing the animal from six weeks to two months of rest. I repeat that I have not the slightest doubt Curb is due to an inflamed condition of the synovial membrane which allows of the easy playing of the perforatus tendon on the inner surface of the post-annular ligament. I very much doubt in my own mind whether so-called sprain of the tendons in the forelegs is anything more or less in ordinary cases, than such an interference with the sheath between the perforatus and perforans as to set up inflammation in it. These tendons are made to move in apposition to each other, and are enabled to do so easily by means of this synovial sheath; and I can easily understand that if, owing to an extraordinary effort, one tendon gets the least bit farther then intended, that the interference will give rise to inflammatory action. Why is it we don't get recovery in these cases, at all events only seldom? Because the gliding surface is lost. The material, which has become inflamed and thickened, can no longer perform its function. I don't think I have any further remarks to make. Any questions you may like to submit to me I shall be pleased to answer. If you will show me where I am wrong or introduce any other theory with regard to the matter, I will endeavour to deal with it.

Capt. RUSSELL: Will you mind offering your opinion as to the qualification of a horse for soundness in a case of Curb?

Professor PRITCHARD: I should say he is unsound most decidedly. I should advise in all examinations of a horse as to Curb, that the central line of the back of the hock be taken. There are plenty of cases mistaken for Curb, where the enlargement is simply owing to an unusual development of the head of the outer splint bone.

Mr. GRESSWELL: Is Curb hereditary, in your opinion?

Professor PRITCHARD: I don't believe it is hereditary. But a horse with hocks predisposed to Curb will breed horses predisposed to Curb.

Mr. MACKINDER: I knew a horse that had Curb, and almost every horse got by him has had Curbs.

The CHAIRMAN: We have heard an excellent and deeply thought-out

lecture, and we cannot show our appreciation of Professor Pritchard's goodness in coming down than by having a good discussion.

Professor PRITCHARD: I should like Mr. Mackinder to give us his idea why a horse with Curb should breed his stock with Curb. I do not say it is not so, but I should like to have an idea why it is so.

Mr. MACKINDER: There is a horse called Montagnard, a thoroughbred horse; he travels in my district, and every horse that he got had Curb. I cannot see, if Curb is hereditary, how it can be entirely due to inflammation of that small sheath.

Professor PRITCHARD: That supports my argument.

Mr. MACKINDER; I should like you to explain how it can be hereditary.

Professor PRITCHARD: I don't believe it is; I said so.

Capt. RUSSELL: I am sure we are all very much indebted to Professor Pritchard for coming to lecture to us on the subject of Curb. Curb is a sore subject to many of us and many of our clients, whatever may be the cause of it. Some hunting men will tell you that if a horse has a Curb and is not lame he is sound, particularly if they have got him to sell. Another man will tell you that he cannot be sound. My own opinion is that if a horse has a Curb or ony other defect which renders him imperfect he cannot be sound. I have heard this theory of Professor Pritchard's before, and I have given it a good deal of thought, for this reason, that I have a specimen at home of ossification of a Curb. That specimen most clearly denotes that the tendons were not implicated, otherwise the tendons would become ossified. In the specimen the point of ossification did not exist more than an inch in length. I have been thinking since Professor Pritchard has been speaking, whether that would tend to prove his assertion. The dimensions of the synovial sheath are probably from an inch to an inch and a half in length. This specimen is certainly not more. The post-annular ligament is four to five inches in length. Is this a specimen of ossification of a Curb? That I cannot explain. I found it in a knacker's yard, and took it home and preserved it. I have an idea as regards the point Mr. Mackinder raised, as to Curbs being hereditary. I am open to conviction, but my idea is that where you see a stallion with curby hocks, and he is the sire of animals, particularly where they have a curby hock, you have a malformation of the bones of the hock projecting behind, which gives the appearance of Curb, and is not genuine Curb. I should like to know whether an examination has ever been made of one of those horse's hocks to prove that it is a case of Curb. There are many foals we see year by year that are roughly pulled away from the mare, with twisted hind legs and projections at the seat of Curb, which in the course of four or five months, as the foal grows up, go back again, and the foal has a straight leg. Why should not that be a Curb? These things require thought and discussion to thrash them well out, and whether it will ever be decided in Professor Pritchard's time, whether he is right or Percivall or Williams, I am not in a position to say, but I must say for myself that I am strongly of opinion that the Professor is on the right lines. In the specimen I dissected I never noticed any disease or apparent thickening of the tendons. Therefore I strongly adhere to the opinion of Professor Pritchard.

Mr. GOODALL: I am much interested in the paper which Professor Pritchard has given us. For a long time I have had my own views on Curb, and am convinced it is not in the cuboid or the annular ligament. I must confess I have been at a loss as to the exact seat of Curb. If it is a good hock we consider it all right, but Curbs on bad sickle hocks we don't know what to do with. They bother us a great deal. From what Professor Pritchard has told us to-day I am quite willing to endorse his opinion, and I shall certainly look into every Curb I can get hold of in future. Professor Pritchard spoke about the metatarsal bone. Only last week there

was a mare, which I knew was hard worked, but a sound animal, with an extraordinary enlargement of that bone of both hocks, and from one point of view it looked as big as a pigeon's egg. I passed it without the least hesitation, but there was a great diversity of opinion as to whether it was Curb or not.

Mr. GOOCH: I was pleased to hear the last remark of Professor Pritchard as to the soundness or unsoundness of a horse with Curb. It was of great interest to me, as a young practitioner. Some of us are called upon at local shows to examine horses for prizes. I have been in that position. A certain horse was deemed by the judges to be the superior animal, but each of the judges thought it had Curbs. I was called in to decide the matter, and found the horse unsound, as suffering from Curbs in both hocks. I was pleased to hear Professor Pritchard state that he would have done the same thing under similar circumstances. As regards the outer metatarsal, the protuberance, I believe, is larger in some cases than in others. In the Clydesdales the bones are much more prominent than in other breeds. I had recently to examine a Clydesdale with exceedingly prominent bones, and certified him to be sound. A month after I was called in by the owner, who stated that a friend had told him the animal was suffering from Curbs. After explaining to him what it was he was quite satisfied with the examination.

Mr. HARTLEY: I for one must add my testimony of thanks to Professor Pritchard for the lucid exposition he has given us as to the exact seat of the disease. What occurs to me is how far our discretion should come in in these complaints, except in cases of malformation. In this county if I rejected unconditionally every animal that has a Curb or curby hocks I should neither be bringing satisfaction to myself nor to my employers. There are lots of horses that I know of which to-day are doing good work and taking their turn. I find if you have got a horse that has had a really good hard preparation and goes sound after severe exertion, and his hocks are not bad sickle-shaped hocks, that you may be safe in saying that the animal is practically sound and not technically sound. I look upon curby hocks as technical unsoundness. Alluding to the remarks of Mr. Gooch, I cannot think anyone, in a case of equal merit, would let an animal through, especially a stallion, with deformed hocks. As to the hereditary taint, there is a foal in this town by a stallion of mine, a horse called Dunmore, which presents this convexity at the back of the hock, whether a curby hock I cannot tell, but those hocks, when the animal is put to exertion, will cause it lameness sooner or later. As to whether it is a Curb or not, I remember Professor Pritchard on the subject of Ring-bone. He used to say, "If you can run the finger down the middle it is no Ring-bone." It is the same with Curb; if you can run the fingers down you can be certain it is not Curb.

Mr. SMITH (Huntingdon): I am afraid I am in the same condition as other gentlemen—hardly in a position to discuss the anatomy of the subject, but as far as I am able to speak from meeting Curbs in everyday life, I am decidedly of opinion that a Curb is unsoundness. For my own part, in a horse five or six years old in good condition, I would rather have a horse with a good Curb than one with a curby hock. I think they are almost distinct conditions. We frequently see cart foals with bad curby hocks that grow up to be quite sound hocks. In the case of a horse with a good Curb, if he was good in other parts I should recommend the purchase, of course mentioning that he was unsound.

Mr. DICKINSON: There is one condition of the hock which bears out Professor Pritchard's idea of Curb, and that is the condition known as sprung hock. I have known horses, ridden and driven, suddenly go lame; they are brought home, and the hock is found intensely swollen, hot, and painful. The usual treatment of lotions and physic is adopted. I have seen a case in which

the exudation rapidly dispersed in the course of a few hours, leaving a confirmed Curb. I agree with Professor Pritchard's idea of Curb, and that one condition bears it out fairly well from a practical point of view.

Mr. GOOCH: One thing, I think, goes a great way towards showing that the seat of the disease is more superficially placed than the calcaneo-cuboid ligament. I don't think you could move the calcaneo-cuboid ligament when the weight is on the Curb, but you can generally move a Curb backwards and forwards, thus proving that the enlargement must be more superiorly placed than the calcaneo-cuboid ligament.

Mr. GRESSWELL: I know a horse whose foals nearly all had Curbs when they became two-year-olds. There was no enlargement of the hock, but they were real Curbs. No one would give more than £15 or £20 a-piece for the animals, but I fired several, and they made high prices. They have gone lame through these Curbs. It was well known in the district that the offspring from this horse had Curbs, not curby hocks. In one case where I fired the horse the owner made £200 of it, although previously he could not get more than an offer of £15. It was a thoroughbred horse.

The CHAIRMAN: Professor Pritchard evidently wished for the discussion to turn more upon the point as to whether the theory he has advanced to-day is right or not; but I, for one, am content to take his opinion, not only from the fact that I was educated under him, but also from the fact that I cannot advance any argument against it. I have heard him say that Curb in horses is decided unsoundness; there is not the slightest doubt that it is unsoundness, legally so. Practical men will agree with me that when we have to examine horses that have Curbs, and have been fired for Curbs, if we rejected all we met we should not possibly have any horses to examine at all. I, for one, am of opinion that if a horse is five years old, and has a Curb on a good-shaped hock, we need see little or any fear in passing it. I should be certain that a horse with a sickle-shaped hock would not stand the work in our country for three months. As to the enlargement of the head of the outer small metatarsal bone, some two or three years ago I was sent to the extreme end of South Wales to examine a valuable horse, and was particularly requested to be careful about the hocks. On going to the stable my eyes naturally rested on the hocks first. My impression was that the horse had about the worst Curbs I had seen in my life. I made a careful examination, and came to the conclusion that it was not Curbs at all. This horse has been in our country for three seasons, and is perfectly sound in his hocks. Since then I have examined two or three more, and they were practically the same.

Professor PRITCHARD: You have all been so lenient with me that there is very little to reply to, for most of you seem to have adopted the theory I have laid down as to what a Curb is. There are one or two remarks, probably, I should make in reply to what has fallen from Mr. Mackinder and Mr. Gresswell. I am at a loss to know why Curbs should be hereditary, and if Curb is hereditary the whole of the theories that have been advanced go to the winds. They have been advanced from 1700 to the present day, and no one says anything about their being hereditary. The seat of the mischief, and everything said with regard to it, must be wrong. If it is hereditary it cannot be a sprain of the calcaneo-cuboid ligament; it cannot be a sprain of the perforatus, it cannot be a sprain of the post-annular ligament, it cannot be a sprain of either of the sheaths I have spoken of. I am at a loss to know why it can possibly be hereditary. I can understand a horse with such bad hocks —commonly called sickle hocks—which, from the excitement of leaping about as yearlings in a pasture, will produce Curb. I have thought whether there might be a rheumatic tendency in the animal, but even then it would not appear always in the hocks. As to the question of soundness and unsound-

ness, you may take it from me, and I am speaking now from an authoritative position. I do not mean as being Professor Pritchard, but from having come in contact with a great deal in connection with these matters, and having had the benefit of the judgment of other people who have had experience in such matters, that a horse with a Curb is an unsound horse. I do not care whether he has a good hock or a bad hock. If he has a Curb he is an unsound horse.

Captain RUSSELL: It is now some seven or eight years since we formed this Association, and I think you will agree with me we have been a very decent lot of fellows altogether. As far as my memory serves me we have not had a single wry word. We appreciate the honour of belonging to the Association. These associations are undoubtedly the means of keeping the profession together. I am sure the proposition I am about to make will receive a hearty greeting. It is that Professor Pritchard be elected an honorary member of this Association. I feel perfectly certain he will appreciate it as great an honour as probably he has received from the profession before

Mr. HARTLEY: I have the greatest pleasure in seconding the proposition, and I feel it to be a great privilege in being allowed to do so. I have known Professor Pritchard for several years, and always found him a kind counsellor and a gentleman to deal with. It will be a great honour to this Association to have him among the list of honorary members.

Mr. GOOCH: I have much pleasure in supporting the proposition. I had mooted it before to the President, and if Captain Russell had not got up I should have been on my legs. At any time Professor Pritchard is at our service.

The resolution was carried unanimously.

Professor PRITCHARD: I am obliged to you for having so unanimously voted me an honorary member of your esteemed Association. It is an honour I did not expect. It falls to my lot fortunately to be an honorary member of several of the associations in the country; honours which I thoroughly, I hope, fully esteem, but I have long had an idea that the Lincolnshire Association was one of the best in the country, and to be elected one of your honorary members has almost taken the voice out of my body. I can only say with Shakespeare, "I am poor in thanks, but I thank you."

A letter was read from Mr. H. Howse, of Lincoln, resigning the membership of the Association.

On the motion of Mr. MACKINDER, seconded by Captain RUSSELL, it was resolved that the resignation be accepted with regret.

Mr. GOOCH proposed a hearty vote of thanks to Professor Pritchard for coming amongst them and giving them such an able lecture.

Mr. GOODALL seconded, and it was carried.

Professor PRITCHARD: I offer you my thanks for the kind manner in which the vote has been proposed and carried. I can only add that if at any future time I can be of use to the Association you have simply to command me.

Mr. HARTLEY proposed, and it was carried, that the next meeting of the Association be held at Peterborough.

Mr. MACKINDER proposed a vote of thanks to the President.

Mr. GRESSWELL seconded, and Mr. HARTLEY supported the vote. Carried.

The President replied, and said it always gave him great pleasure to do what he could for the Lincolnshire Association.

F. L. GOOCH, *Hon. Sec.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above Association was held at the Blackfriars Hotel, Manchester, on December 11th.

Present: E. Faulkner, President; William Hunting, London; Messrs. T. Hopkins, Peter and W. A. Taylor, Thos. Greaves, W. Dacre, J. Moore, W. Hall, and P. Pike, all of Manchester; R. C. Edwards, Chester; W. Whittle, Worsley; Thos. Briggs, Bury; E. S. Gubbin, Glossop; W. Wood, jun., Wigan; G. G. Mayor, Kirkham; H. Ferguson, Warrington; Thos. Dobie, Birkenhead; J. B. Taylor, Ashton-under-Lyme; Jos. Abson and J. T. Thompson, Sheffield; W. H. Bridge, Bolton; D. Charnock, Aintree; Jas. Charnock, Melking; Jos. Urmson, Bolton; G. Howe, Buxton; and S. Jackson, and the Secretary, Liverpool.

Letters of apology for non-attendance were received from Professors Williams, Walley, M'Call, and Axe, H. Kidd, R. C. Trigger, W. Noar, Jas. Hart, and R. Hughes.

Mr. J. T. Thompson, F.R.C.V.S., of Sheffield, was nominated for membership.

Mr. George Howe, M.R.C.V.S., of Buxton, was elected a member of the Association.

A letter was read from Mr. John Moore, tendering his resignation on account of his entering the Army Veterinary Department. The resignation was accepted with regret.

A letter was also read from the relatives of the late G. H. Darwell, of Northwich, thanking the members for their expression of sympathy under their recent bereavement.

It was proposed that a letter of condolence be sent to the father and relatives of the late George Ellison, of Chorley.

A letter was read from Professor Walley on the subject of Tuberculosis being included in the Contagious Diseases (Animals) Act, and also the inspection of meat, but it was the unanimous wish of the members that Professor Walley be communicated with, with the object of inducing him to attend a meeting of the Association to lay his view down at greater length. This was put in the form of a motion by Mr. Peter Taylor, and seconded by Mr. Thos. Greaves, and carried unanimously.

Mr. PETER TAYLOR and Mr. THOMAS GREAVES then gave a detailed account of their visit to the practitioners of Liverpool, with the object of obtaining their better attendance at the meetings of the Association; it was proposed that a hearty vote of accorded to both for their kind efforts.

The election of officers for the ensuing year then took place.

Mr. W. A. Taylor was unanimously elected President.

Messrs. W. Woods, junr. (Wigan), and Arthur Leather (Liverpool) were elected Vice-Presidents.

Mr. T. Hopkin was re-elected Treasurer.

Mr. Pike was elected Secretary.

Messrs. John and Alexander Lawson were appointed Auditors.

A hearty vote of thanks was accorded to the office-bearers for their services during the past year.

The following paper was then read by Mr. HUNTING on the

TREATMENT OF WOUNDS.

I accept, generally, the doctrine that the principles of pathology are applicable to all animals having a similar anatomical structure. Inflammation is the same process wherever found, and fever presents no differences in the domestic animals other than are found in man. We veterinarians are therefore able to adopt and apply all the broad principles accepted by the human

surgeon. Of course we accept them rationally—not as mere imitators—and we hope and believe that our experience is, in some things, of use to them, and worthy of their acceptance. But the physiological and pathological actions which are seen in man vary to some extent in individuals as the result of internal and external conditions. Sometimes idiosyncrasy, sometimes previous disease modifies the pathological changes. The hæmorrhagic diathesis, for instance, affects the healing of wounds, and syphilitic infection alters the phenomena of many diseases. Insanitary surroundings also add to the surgeon's difficulties, and too often convert a simple condition into a dangerous and complex one. In the lower animals we are less troubled by idiosyncrasies and morbid taints, but we have other difficulties to contend with. We cannot order or maintain certain favourable positions of the patient, we cannot ensure quiet and rest, we cannot always guard against injury to a painful part by the animal itself, and we cannot arrange the sanitary appliances and surroundings as we should wish.

On the other hand, the sheds and stables in which our patients are treated are generally free from the septic conditions sometimes found in hospitals and occasionally in houses. We seldom have much to fear from shock, and still less frequently have we to combat the nervous depression and irritability due to mental conditions.

There is then sufficient difference between and human veterinary surgery to warrant us in discussing pathological questions without fully accepting the practice of the sister profession.

This, gentlemen, is my apology for coming here to discuss the subject of the treatment of wounds with some doubts as to the value of the usual aseptic methods. Our practice, following in the wake of human surgery, seems to have very widely adopted asepticism as the great fundamental principle in treating wounds. I do not wish to deny the importance or the truth of the great principles worked out so ably by Sir Joseph Lister, but I incline to believe that they are not so requisite in veterinary surgery as in human, and I am doubtful if many of the methods of applying them are not very imperfect, and sometimes the cause of ill effects as serious as those they are employed to prevent.

The argument, as I understand it, is this—The very worst thing in or on a wound is a germ ; the air is full of germs, the surface of the skin is covered with them, all materials that may come in contact with a wound have germs in or on them. Therefore disinfect the wound, disinfect the air, disinfect all fluids and solids which must or may come in contact with the wound. Now I take exception to this argument—I deny that all germs are injurious to a wound, and I do not believe that injurious germs are frequent in the air or common on all sorts of material. The air may, for all I know, be as full of germs as the earth is full of seeds. I am convinced all the seeds are not poisonous (many are beneficial), and I am inclined to believe that nearly all the germs in the air are harmless. It may be replied that no one has said they are *all* harmful; that the precautions of aseptic treatment are only directed against the few which may exist and which cause such grave mischief when they are present—mischief so grave that it behoves us always to guard against even the possibility of their existence.

To this I say that when human life depends upon the result no chance should be thrown away, but it should be carefully considered whether the methods adopted to guard against a possibility do not entail certain disadvantages. The results of aseptic procedure in human surgery seem to indicate that it does protect from great dangers, and that its disadvantages are very slight. Many operations are now performed with safety that a few years ago were too frequently followed by fatal results. Is this entirely due to asepticism? May it not depend upon improvements in other surgical

details? These questions I cannot answer; but I doubt whether our patients can be made to experience the same improvement in the healing of wounds by our more widely and thoroughly adopting the principles of Listerism.

What we require in veterinary practice is rapid healing of a wound, no blemish that can be avoided, and as little interference with the future function of a part as possible. These desirable conditions are interfered with by many events over which we have no control. There is in all wounds a natural tendency to heal, but nature does her surgery without any consideration for time or loss of work, with no regard to blemish, nor even to future impairment of function. It is our duty to guide the process, and to remove anything which interferes with its progress. Accidental wounds, which form the bulk of our practice, are frequently not brought under our notice till long after they have been inflicted. They vary in degree and in kind as much as they do in position. The smallest incised wounds and the most complex injuries come under our notice at all stages—sometimes quite recent, at others after days of the grossest maltreatment.

Before considering these it will perhaps be more convenient to consider those surgical wounds which we deliberately make, and which we have, to some extent, under our control from start to finish.

In castration and spaying we have examples of wounds inflicted on important structures, and it is worth noting how seldom they are followed by any dangerous complications. Probably no one ever saw them done under strict aseptic rules, and yet what evils have we ever traced to germs in them. No wounds are supposed to be more dangerous than those opening into the abdomen. Thousands of pigs are every year laid on their backs, an opening made into the abdomen, a finger inserted, the ovaries pulled out and removed, the wound stitched up and not one single antiseptic precaution taken either with the patient's skin, the operator's hands, or his knife and sutures. The fatality is not one per cent.

Colts, calves, lambs, and cats are castrated by the thousand without the least care for germs—and how many die? The percentage of loss could only be stated in fractions. Then look at the tumours that are removed with no aseptic precautions. Healing by first intention is common enough, and when absent may generally be easily accounted for without any supposition that micro-organisms have prevented it.

In the case of spaying, although no antiseptic precautions are taken, there is one condition always observed by the most successful operators, viz., withholding food for twenty-four hours previously and for some time after. My own small experience leads me to believe that this is a most important detail, though I can offer no explanation as to its action.

In the case of castration nearly all our losses are *traceable* to two causes—hæmorrhage and swelling. The first I think is only the result of negligent surgery, and the latter never results except when the animal is tied up and prevented from moving about.

In the case of tumours we fail to obtain healing by first intention, or by adhesion as the result of one or two very simple conditions. Perhaps I had better say here that I recognise no difference in the processes described as "first intention" and "adhesion." They are essentially the same, and consists in the union of the sides or lips of a wound without granulations or without any new tissues being formed between them. When a tumour is large its removal leaves a wide gap in the tissues, and it may be impossible to approximate the two cut surfaces without considerable stretching. Of course if they do not approximate they cannot adhere. When stretching is great the sutures may be "cut out" and the wound gape, or the animal may rub them out. The cause of non-union is the purely mechanical one of want of contact. The shape of the wound made may also be a cause of failure. No one

can bring the surfaces of a basin-shaped wound into complete and equal apposition; it must be elongated at the expense of some sound tissue at each end, and then we obtain two nearly flat surfaces which may be properly brought together with tolerably even tension throughout. Another cause of failure to obtain adhesion is too great haste to finish the operation, resulting in blood being left in the wound. All vessels should be tied or twisted and capillary oozing checked by cold water and sponging. The very best results follow when the wound is allowed to become nearly dry before being closed.

Some years ago a pony was brought to me with a wound on the alæ-nasi. A hook had penetrated the alæ, the pony ran back and tore it out, leaving the two sides separated for nearly three inches. A farrier had, two or three days before I saw it, sewn it up with four string stitches, but these had given way, leaving the edges of the wound dry, thickened, and not united anywhere. I cast the pony with the only available tackle (a cart rope) and pared a thin slice from each lip of the wound. At this stage the pony by struggling got so loose that I was obliged to let him up and re-cast him. I remember thinking my re-vivified edges would get dry and that the delay would spoil the operation. The wound was closed with pin sutures, and the patient was to have been brought back in three days for inspection. I did not see it till the seventh day, when the owner was passing. Every pin had cut itself out, leaving a transverse line, and the wound was healed throughout. A few months after, no trace of the injury was visible. This first taught me never to hurry, but to wait until bleeding ceased, and to expect the best results from closing a wound when the surfaces showed no blood, but only that glazed condition due to exudation of lymph.

Another instructive case I venture to relate. A grey horse at grass was found one morning with a transverse wound across his ribs. It was a clean cut, and was thought to have been maliciously done with a knife. It was just over two feet in length, and gaped at its widest part about nine inches. The tissues were very mobile, not a drop of blood was in the wound, but it had one nasty feature which I thought might give trouble. The muscular tissue under the skin was cut through, and the muscle had retracted. When the parts were put together, just to see how they met, it was found that the incision in the skin was at a level three inches higher than that in the muscle. Waxed linen-thread was used to close the muscle-wound, and the ends of each suture brought out of the skin-wound. The skin was brought together with pins. In six days most of the pins had cut out, one of the thread sutures was gone, and adhesion had taken place throughout. The wound sloped downwards posteriorly, and at its extremity a small abscess the size of a walnut had formed; this was opened and healed rapidly.

When I saw this wound it had been done four hours at least, and possibly seven or eight. Exposure to the air had done it no harm. Whatever organisms existed in the air must have been very harmless, or we could not have had such an extensive surface heal at once by adhesion. In this case, too, like the other, all bleeding had ceased, and we had the condition which I consider most favourable to rapid union. This patient I have said was in a field, and it may with much force be argued that the air surrounding him would be the least likely to contain any injurious organisms. The air in stables does not of itself seem injurious to wounds. We all have seen cases in which an incision or tear of the skin inside the elbow has been followed by emphysema to such an extent as to distend the skin and subcutaneous connective tissue all over the region of the neck, shoulder, and part of the thorax. Such cases, with no aseptic treatment, soon recover, and I never saw the slightest untoward symptom result.

The healing of wounds made in the operation of neurotomy teaches us at

least two points. A few years ago these wounds were treated by wet bandaging, and no healing by adhesion ever resulted. The openings gaped, and were filled up by granulation to such an extent that in most cases very evident scars were left. Now that dry dressings are resorted to, healing is very rapid, and blemishes, if even they exist, are very small.

In my experience, the worst complication we meet with is swelling of the legs. This effectually prevents all healing by adhesion, and very often causes the wounds to gape and discharge for a long time. All wounds on the lower part of horses' legs may meet with this great disadvantage. Swelled legs are most common, and one great cause is tying the animal up in a stall. With wounds on legs, we naturally desire to avoid the stretching effects of motion, and the still more forcible injuries resulting from the animal lying down. We try to prevent these by tying it up, and then we incur the equally great disadvantage of swelling. In fact, I think swelling of legs which are wounded is the greatest interference we have to fear, and, unless the wound be directly over a joint, I always advise a loose-box. No treatment of wounds of the extremities can be very successful which does not guard against swelling or, should it exist, which does not at once endeavour to remove it. Perhaps in no case is the retarding effect of swelled legs upon a wound better seen than in ordinary cracked heels. If the skin be thickened by exudation in it and under it, no treatment seems effective in promoting healing. If we reduce the swelling—and nothing does this so well as exercise—healing at once sets in, and progresses favourably.

So far my remarks have been suggested chiefly by my experience of incised wounds, and the lesson I think they teach is that we need not alarm ourselves about the possibility of septic infection. If we obtain healing by first intention or adhesion, we shall certainly have no septic trouble. We can, I hold, get this by a few ordinary precautions.

1. Do not close the wound until bleeding has ceased, and, if necessary, wait a few hours for this. In many cases, although a little oozing of blood is still proceeding, the mere pressure of bringing together and retaining the cut surfaces will check further flow.
2. Shape your wound so that no cavities are formed by the two surfaces not being in contact.
3. Let the coaptation of the surfaces of a wound be as exact as possible.
4. Secure them firmly and closely.
5. Avoid all heat and moisture.
6. Anticipate and prevent swelling.

The fifth precaution—avoid all heat and moisture—is the one which I say used to be neglected in Neurotomy when wet bandages were used. Now this is the great objection I have to most methods of applying aseptic or antiseptic treatment. You cannot retain dressings on a wound unless they are kept in a position by cloths or bandages, and nearly all dressings are liquid. Immediately you wrap a wound up, you keep it warm and moist, and this is a condition amongst the worst for rapid adhesion. It is perhaps argued that heat and moisture are only evils to a wound because they favour the activity and increase of micro-organisms, and that if the part be kept surrounded by antiseptics, no organisms can exist. I believe that heat and moisture are bad in themselves, that they injuriously affect the nutritive changes of the part, and damage the physiological process of healing. When we, by retaining heat and moisture around a wound, form just the very best state for the existence and growth of organisms, we must use our antiseptic dressings of as great strength as the risk of poisoning will allow. Now many of these dressings that are strong enough to kill outside organisms are also strong enough to kill the living cells, without which repair cannot go on.

Such risks are warrantable in an atmosphere where septic infection is

known to exist, but I do not think that in veterinary practice our patients or their surroundings are in a condition to require any course of treatment for wounds which entails so many disadvantages, and which in practice is shown so generally to be unnecessary.

I may perhaps here be allowed to say a few words as to the best methods of closing wounds. I have tried many kinds of sutures, but for some years past have used nothing but pins and skewers, with a figure-of-eight twist of cotton cord round them to hold the lips of the wound in apposition. I do not have them made of steel, as that metal rusts. I use ordinary blanket pins, varying in length from two to three inches for most wounds, ordinary small pins for the smaller wounds, and kitchen skewers (tinned or galvanised) for the largest. All pins are now tinned, and leave a wound after a week or more quite bright. When they are in position, I remove the points with a pair of cutting forceps. Pins do not cut out so quickly as wire sutures, and are quite innocuous in a wound. When I find a pin cutting itself out too rapidly, I place a larger one alongside of it and remove the first one. In large wounds it is advisable to take a very wide hold of the tissue—perhaps two inches from the edge of the wound. In such cases I always put small pins through the immediate edge to prevent any gaping.

The accidental wounds which come to us for treatment, present greater difficulties than the clean incised wounds we make ourselves. They are often bruised or torn, sometimes masses of skin or other tissue are removed, and not unfrequently their form or position renders it inadvisable to close them at once. Some of the very worst wounds we see are in cases of broken knees—a large portion of skin is entirely removed, the surrounding tissues are bruised, the denuded structures are torn and jagged, whilst grit and dirt is literally rubbed into their structure. We may be certain that a great deal of swelling will follow, movement makes them worse, and a synovial discharge may come from the sheath of the extensor metacarpi, or even from the joint itself. In such a case what is the best procedure? I hold that the safest practice is to make up your mind what is the worst complication likely to arise, and set to work to anticipate it. We may perhaps decide that intense inflammatory action will arise, and cause the wound, which at present has not opened any synovial cavity, to be complicated by an escape of synovia. For such cases I employ continued cold water irrigation. When bruising, pain, and swelling are the most to be feared, I trust in warm water. When the injury is more superficial, I use carbolised oil.

There is a position where wounds, in my experience, arespecially liable to have no depending orifice, and in which exuded fluids are prone to collect, *i.e.*, just in front and below the ankle of the ileum. Tears and cuts in this region, even if the agent causing them does not penetrate downwards, are liable to form sacs, owing to the looseness of the tissues allowing fluids to gravitate between them. Without a depending orifice be made they heal badly, and I need hardly say should never be sewn up.

In muscular regions of the body, lacerated wounds often so damage tissues that it is important, before closing them, to form a correct opinion as to vitality of the parts. Shreds of tissue may be so isolated or crushed as to have no chance of reviving. Should they die in the closed wound, healing is impossible. Such damaged portions should be removed with as great care as clots of blood or distinct foreign bodies. I remove them usually with scissors, and snip off piece after piece until I make a cut from which blood flows. So long as no bleeding follows a cut, I consider the tissue incapable of restoration. Perhaps I should make an exception in favour of skin. I never remove strips of torn skin from a recent wound, but carefully replace them in the best position I can. Even if they do not adhere, they are a protection, and can be cut away when their non-vitality is quite assured.

With accidental wounds, then, we have further conditions which interfere with the healing process. We have the probability of portions of dead tissue, or of such injured structures that their recovery is impossible. We have cavities which can only be filled up by granulations, and which may retain collections of fluid. We have the formation of pus, which need not be feared so long as it remains normal. We have, in fact, conditions where septic infection is to be feared. It is when we have fluids in a wound that organisms become mischievous. Serum, blood, pus, if allowed to collect, are dangerous. They must be allowed to escape, and when we cannot get rid of them as quickly as they are formed, we use disinfectants to prevent them becoming septic. Agents that are dry I prefer, such as powdered boracic acid or mixtures containing iodiform, or corrosive sublimate, or salicylic acid. Next to these, I like antiseptics dissolved in oil. Of course, to wash out large cavities aqueous solutions must be employed; and no agent gives better results than permanganate of potass.

Extremes of heat and cold add to the difficulties of treating wounds. In India we are told that septic infection is greatly to be feared. In Canada, during the winter months, injured parts die rapidly from the cold, and wounds of the extremities are especially dangerous. In this climate we have not much to fear from the infrequent extremes of temperature, but we must not lose sight of the fact that cracked heels are chiefly of the nature of chilblains, and that in winter, wounds below the knee and hock may well be protected by some non-conducting covering—flannel bandages and cotton wool for choice.

Now, gentlemen, I have, I think, said enough to initiate a good discussion. The chief point I insist on is that careful detail is, in the treatment of wounds, as in every other operation, the most important factor to ensure success. I am open to correction if I have formed any erroneous view of the danger of septic infection. I hold we should, whenever practical, endeavour to obtain healing by first intention, and that our observations should be directed to detecting what retards and what facilitates that process. I am not at present inclined to allow that promiscuous organisms do much harm to wounds, and I do not think we find many special organisms with infective properties in the conditions which surround the lower animals. If this be so, we need not adopt all the tiresome minutiæ of aseptic surgery, and we need not allow the absolute impossibility of applying it in many cases to cause us any vain regrets. On the other hand, if I am wrong, I shall conscientiously revise my surgical practice.

Mr. PETER TAYLOR opened the discussion by extending to the essayist his warmest thanks for coming so far and reading them so good a paper. He did not, however, agree with it all, and he missed from it much that he should like to have heard discussed—notably, the treatment of wounds of the foot. He confessed that the treatment of wounds had much advanced since his early days. He thought they were deeply indebted to Lister for his great work, and he should not lightly coincide with the essayist in disapproving of it. There were two distinct methods of treating wounds—the dry and the wet treatment—but both had for their basis asepticism. He noticed that Mr. Hunting did not believe in germs, but he used carbolic and boracic acids. Why? The treatment of simple wounds was an easy matter, but wounds of the thorax and abdomen were always serious, and some of them simply frightful. It was in these cases the practitioner required all his skill and every assistance that science could offer.

Mr. TAYLOR related cases which he had seen, and described fully a case in which he had to cast a horse, and with great difficulty return a mass of protruding intestine; the wound was sewn up and merely dressed with Friar's balsam, but to his astonishment it made a perfect recovery.

Mr. GREAVES had had considerable experience in the treatment of all sorts of wounds, and came to the conclusion that the majority did best under an antiseptic dry treatment. He felt certain Mr. Hunting was correct in his ideas, but he knew some practitioners who treated broken knees with nothing but cold water, and they claimed to be very successful. He used mild astringents, and lately had largely employed corrosive sublimate in solution, which he found to be an excellent disinfectant. He had been much pleased with the scientific and practical paper, the general principles in which he endorsed.

Mr. WHITTLE had also been much gratified in listening to the paper. He agreed with the treatment there laid down, and would like to see the author more often amongst them.

Mr. EDWARDS said it was his practice to treat wounds very simply. He related two cases of wounds penetrating the thorax, in each of which the injured parts felt icy cold, and the patient soon died. He would like to know what was the significance of this cold feeling? He did not much believe in stitching up flesh wounds. He found they healed up well when let alone, and gradually contracted to their proper form. He never adopted warm fomentations to wounds, and generally used boracic acid or a solution of Ol. Eucalypti applied with a feather.

Mr. DACRE had been very much interested in Mr. Hunting's paper, with which, on the whole, he agreed. He considered that too much was often done to wounds. He used sublimated wood wool as dressing, and related a case of a dog whose foot was run over and crushed. The treatment consisted in wrapping it up in the wood wool, and recovery took place without a bad symptom. The parts were excluded from the air and the dressing was perfectly absorbent and antiseptic. He had had most successful results in cases of extensive injuries on horses by keeping the part covered by a carbolised curtain, which was a method of keeping the wound and the air surrounding it free from any septic evils.

Mr. J. T. THOMPSON confirmed the value of the treatment suggested by the essayist. He, however, believed in poulticing foot cases, as great relief was given by the softening of the horn.

Mr. ALSON recommended the use of iodoform, which in his practice had given very good results.

Mr. BRIGGS thought antiseptics were of great value in wounds of serous cavities, and pointed to the grand results achieved in the human subject in abdominal surgery—results he thought unattainable until the asceptic methods were introduced. He felt a little disappointed that Mr. Hunting had not touched upon fistulous wounds, which were so common in practice, and so often unsatisfactory in their termination.

Mr. W. A. TAYLOR remarked on the wounds produced by castration, and differed from Mr. Hunting as to the cause of death. Neither hæmorrhage nor swelling, in his experience, were causes, but Septic Peritonitis was. He had confidence in asepticism, and adopted it as a surgical principle. He would just add that he considered the dragging of muscle which was entailed by using deep sutures in some wounds a great evil. When parts could be approximated without stretching the tissues he brought them together, but not unless.

Mr. HOPKIN did not altogether coincide with Mr. Hunting's opinion of antiseptic surgery. The operations now performed by human surgeons, as reported every week in the medical journals, were simply appalling. Their success was due to the careful antiseptic precautions taken, and would have been impossible in the days before Listerism had been accepted. He agreed with the previous speaker that Septic Peritonitis was the cause of deaths following castration. Old castrators were most careful with their hands and

instruments to avoid all contaminations. As to the operation of neurotomy, he avoided all the difficulties of treatment by sending the animal at once to work. The wounds then healed well and rapidly, and no swelled legs arose to interfere with the healing process. As to heat and moisture, they were bad for healing by adhesion, but they were useful promoters of granulation. Mr. Hopkin also referred to abdominal wounds and burns, the latter of which were most difficult and troublesome.

Mr. G. MAYOR said that if Mr. Hunting were wrong he erred in good company, for Mr. Lawson Tait and the late Mr. Sampson Gamgee did not adopt any rigid or septic rules in their surgery, but both were most successful surgeons; in fact, Mr. Tait probably had no equal as a practitioner of abdominal surgery. He related a case of an upper eyelid of a horse which was nearly torn off, but which when sutured in its place made a perfect recovery. This, he thought, was due to it having been closed in the condition referred to by Mr. Hunting—after all bleeding had ceased and the surfaces covered by a mere coating of lymph.

Mr. WOODS, jun., thought there was a danger of revulsion against asepticism, which, however, must be acknowledged as an important principle. He thought that a safe rule in the treatment of wounds was to decide what beneficial termination appeared nearest, and then to endeavour to attain it.

Mr. HUNTING, in reply, thanked the members for the way in which they discussed the subject. He had not ment to deny altogether the value of antiseptic treatment. He objected to those methods of employing it which necessitated the injured part being kept hot and moist by wrappings, and he wished to protest against it being accepted as more important than many details which assisted in promoting healing. He believed that all collections of fluids, either blood, serum, or water, should be prevented accumulating in or around a wound, and that without them no germs need be feared. Of course, if we knew of the existence in or about a wound of septic conditions, we must remove them or render them inert. He then rapidly, and sometimes humorously, replied to each speaker who had suggested objections to his paper, pointing out that it must necessarily be very incomplete. The subject was too large for exhaustive treatment; he only attempted to touch the broad principles, and to attract a good discussion.

Proposed by Mr. P. TAYLOR, seconded by Mr. T. GREAVES, that a very cordial vote of thanks be accorded Mr. Hunting for coming such a distance to render them such service, and for the very excellent character of his paper. Carried unanimously.

The usual vote of thanks to the President terminated a very successful meeting.

ARTHUR LEATHER, *Hon. Sec.*

ONTARIO VETERINARY COLLEGE.

THE buildings of this college are now complete. The large building, with its laboratories, class rooms, and lecture halls, is steam-heated throughout, and is waiting occupation. The classes were to assemble there for the first time on the 6th of January. The great advantage of having everything necessary for teaching purposes in one building, will be fully appreciated by both teachers and students. Up to the present time, owing to the large attendance, the lectures were delivered in a hall separate from the college building proper.

Professor Smith's efforts to improve the college have been crowned with success, and the following resolution, passed at the last meeting of the Agriculture and Arts Association of Ontario, shows the estimation in which his labours are held.

Mr. SNELL moved: "That the council of the Agriculture and Arts Association of Ontario, having visited and inspected the handsome new veterinary college erected by Dr. Smith, desires to record its pleasure and satisfaction at the wonderful progress made by this institution." The motion further went on to say that it was a matter of special gratification to the council to know that an institution which was inaugurated under its auspices, and whose graduates still receive their diplomas from this council, has been attended with such success.

The Christmas examinations of the Ontario Veterinary College were concluded on Friday, and the following gentlemen were awarded diplomas:—Walter Amos, Frank H. Anderson, Joseph F. Black, Henry Bradshaw, David J. Carson, Montague A. Davies, Frederick H. P. Edwards, Robert Fawns, John Fyfe, Ulysses S. G. Faling, Willard H. Harris, Charles H. Hunt, Thomas H. Hassard, James Hanson, Charles A. Howson, William D. Hammond, James J. Joy, James H. Johnson, Robert Johnson, James J. Karr, William Keogh, Patrick J. Lynchke, Edmund Latousell, Arnold F. Lees, John Martin, W. Sanford Niles, Jefferson Pulford, James C. Sharp, Moses Sinclair, Elias P. Smith, Robert M. Thompson, T. James Todd, Michael Whalen, James N. Wilkinson.

The following were granted primaries:—In anatomy, William S Lyons, William Routledge, Edwin C. Radley; in materia medica, William J. Gerrow, Chas. E. Hatch, J. Gordon McPherson, Andrew L. Milroy, John H. C. Todd.

PROFESSIONAL EXAMINATIONS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

AT a meeting of the Court of Examiners of the Royal College of Veterinary Surgeons, held in London on and between December 17th and 20th, 1889, the following students from the Royal Veterinary College passed their Oral and Practical Examinations, and were admitted members of the profession:—

Mr. M. W. Galward	
„ R. C. Bullen	
„ A. H. Sugden	
„ W. B. Gridley	Sudbury, Suffolk.
„ H. S. Eglington	Walsall Road, nr. Lichfield.
„ E. C. Storey	Holloway, N.
„ R. Halpin	
„ W. A. Stainton	Hornsey Road, N.
„ I. J. Williams	
„ J. B. Dier	
„ C. C. Nesling	Debenham, Suffolk.
„ J. J. Brown	Ormskirk, Lancs.
„ E. R. Edwards	Outwell, Wisbech.
„ J. F. B. Moody	Leamington.
„ H. H. Hide	Lower Edmonton.
„ P. W. Creagh	
„ A. Perkins	Oakley Square, N.W.

The following students passed their Second Examination:—

Mr. G. Upton.	Mr. G. A. Wickett.
„ De C. Clinchy.	„ H. A. Patison.
„ J. W. Hopkins.	„ J. R. Robins.
„ T. N. Davis.	„ D. E. Taylor.

*Mr. T. F. Prime.	Mr. J. E. Tooth.
„ P. Eashe.	„ E. B. Robinson.
„ F. W. Garnett.	„ J. H. Skelton.
„ T. W. Hindle.	„ H. W. Leech.
„ S. Bennett.	* „ P. Perkins.
„ R. Forshaw.	„ H. H. Trumar.
„ E. W. Bovett.	„ R. Wilks.
„ G. S. Thomas.	„ W. Scales.

Mr. H. Sharpen.

The following students passed their First Examination :—

Mr. G. W. Chater.	Mr. S. A. Nye.
„ E. W. Morris.	„ W. G. Pakeman.
„ W. Lindley.	„ A. E. Prudames.
„ H. Green.	„ H. Bidlake.
„ P. B. Godfray.	„ R. W. Cooper.
„ H. C. Welch.	„ A. J. Lane.
* „ A. Stevens.	„ H. E. Taylor.
„ E. J. Thorburn.	„ G. S. Harris.
„ A. E. Oliver.	„ F. W. Evans.
* „ F. W. Smith.	„ J. C. Everest.
„ J. Osborne.	„ E. P. Barry.

Mr. J. T. Priestner.

Marked thus * passed with Great Credit.

ARTHUR W. HILL, *Sec.*

At a meeting of the Board of Examiners, held in Glasgow and Edinburgh on and between December 12th and 17th, 1889, the following gentlemen passed their Final Examination, and were admitted members of the Royal College of Veterinary Surgeons :—

Glasgow College.

Mr. H. Potts, G.C.	Broomhill, Lanarkshire.
„ J. McDougall	Helensburgh.
„ C. J. Dunn	Glasgow.

New College.

Mr. E. Franklin	Sheffield.
„ E. H. Schofield	Manchester.
„ T. H. Dale	Manchester.
„ W. Dotchin	Newcastle-on-Tyne.
„ D. McGregor	Tullypowsie, Perthshire.
„ T. Eastwood	Manchester.
„ R. C. Hughes	Denbigh.
„ G. Stevenson	Stronsay, Orkney.
„ G. Radcliffe	Oldham.
„ F. D. McLaren	Beverley.
„ E. P. Edwards	Mold, N. Wales.
„ T. S. Snarry	York.
„ E. F. de Jong	Edinburgh.
„ G. H. Scoon	Kelso.
„ T. W. Barraclough	Bradford.
„ R. W. Donadson	Bridge of Allan.

Dick College.

Mr. J. Peddie, G.C.	Edinburgh.
„ J. Bell	Gateside, Cumberland.

Mr. W. McQuatt	Kirkconnell, Dumfries
„ C. Deathe	Enniscorthy.
„ W. Potts	Banbridge, Co. Down.
„ J. E. Miller	Sunderland.
„ T. W. Rogers	Welshpool, Wales.
„ G. Henderson	Edinburgh.
„ C. Wade	Dublin.
„ W. A. Young	Tullow, Carlow.
„ W. H. S. Day	Portobello, Edinburgh.

The following gentlemen passed their Second Examination :—

Glasgow College.

Mr. J. Meikle.
„ A. Milligan, G C.
Mr. F. J. Boyle.
„ R. P. Dalgleish, G.C.

New College.

Mr. J. Norbury.
„ G. H. White.
„ W. E. Sayles.
„ L. Brown.
„ W. Litt.
„ J. A. R. Tower.
Mr. R. J. Bushnell, G.C.
„ W. G. Senior.
„ O. A. Ducksbury.
„ H. E. Richardson, G.C.
„ A. J. Dalgleish, G.C.

Dick College.

Mr. H. W. Squire.
„ T. Condon.
„ G. Best.
„ R. Foreman.
„ E. Carroll.
Mr. W. Curston.
„ J. Nolan.
„ H. S. Clark.
„ J. Mitchell.

The following gentlemen passed their First Examination :—

Glasgow College.

Mr. H. McConnell.
„ R. Mason.
„ D. P. Harvey.
„ H. L. Chambers.
Mr. H. Hazeel.
„ F. T. Barton.
„ A. P. Stewart.
„ W. Crowley.

New College.

Mr. J. M. Lund.
„ G. W. Balfour.
„ M. J. Carroll.
„ T. Lanchester.
„ W. O. C. Dawson.
„ J. S. Gould.
„ J. W. Martin.
Mr. W. Sime.
„ N. Fraser.
„ R. Taylor.
„ F. T. Blakemore.
„ J. A. Lyons.
„ W. C. Patrick.

Dick College.

Mr. L. P. Knight.
„ H. Shaw.
„ W. Elder.
„ T. Durie.
„ T. J. Foulkes.
Mr. J. Jones.
„ D. Ritchie.
„ T. Smyth.
„ C. Hicks.
„ J. Mallow.

R. RUTHERFORD, F.R.C.V.S.,
Secretary, Board of Examiners.

INTERNATIONAL VETERINARY CONGRESS.

(*Continued from page* 459, *vol. xxix.*)

THIRD SITTING, SEPTEMBER 3RD.

THIS meeting was devoted to the discussion of the question dealing with the international measures to be adopted for the prevention of Epizoötic Diseases. Remartinez, a veterinary surgeon in the Spanish army, and Neiman, of the Russian army, reporters on the question, could not be present at the *séance*. LEBLANC declared that he entirely accepted the conclusions in the report of M Thomassen, which might serve as a basis for the discussion.

The PRESIDENT (Dr. Chauveau) thought the first conclusion could not be contested. *That there was need for instituting an international convention to consider the measures to adopt against epizoötic diseases.*

This was unanimously accepted.

The second conclusion was—*That for such a convention to be established, it should be a condition,* sine quâ non, *that every country agreeing to it should have its veterinary service organised in such a way that it might repress, as soon as possible, the different contagious diseases.*

ERAERS thought this insufficient; not only should there be an organised service, but the head of it should be a competent and independent veterinarian, and in each district or country (*circonscription, department, province,* or *district*), there should be a chief veterinary surgeon not in practice; while all veterinary surgeons should concur in carrying out the law.

This conclusion was unanimously adopted.

With regard to the publication of an international sanitary bulletin, the following proposition was adopted: *Such a bulletin shall appear in ordinary times every eight days, and it will be for future consideration in what language it will be published.*

The following conclusions were unanimously adopted: *When an epizooty appears in one of the agreeing countries, this should warn the others as quickly as possible. The introduction and propagation of the disease should be ascertained, and the result communicated immediately to the countries interested.*

A discussion took place as to the transport of animals, when the majority adopted the following resolution: *The sanitary visit to the frontier should be assured, either by the debarkation of the animals and their lodgment on quays furnished with sheds, or by their conveyance in special wagons which allow them to be inspected without removal therefrom.*

With regard to a health certificate, the following resolution was, after some discussion, adopted: *Each contracting country engages not to allow upon its territory, nor to send upon the territories of other countries, any animals unless they are accompanied by a certificate of origin and of health, the authenticity of this document being officially established by the double testimony of the administrative and the veterinary authorities, and it being in force for as brief a period as possible.*

The following resolution was adopted with regard to measures of disinfection: *The railway wagons, or ships, shall be cleansed and disinfected under the control of veterinary surgeons, according to certain rules laid down for them on each occasion when they have carried domestic animals. When they have been in another country, this disinfection shall take place before they pass the frontier. Disinfected wagons shall be recognised by a certain sign.*

The following paragraphs were also adopted: *In the international markets the imported slaughter cattle shall be kept separate from those intended for breeding, and which are to be spread over the country. Abattoirs should, whenever possible, be erected in the vicinity of markets. If a contagious disease*

breaks out or reigns in a State at a certain distance from the frontiers, the Governments of the neighbouring countries shall not interdict the entrance of certain animals or their products, if care has been taken to circumscribe the centres of contagion in the invaded country, and to prevent, by every means, the extension of the malady. If the closing of the frontier is deemed necessary, the movement of cattle of a neighbouring country for pasturage or labour shall be permitted, under certain reserves, to the inhabitants of the frontier.

A resolution as follows was passed: *Every dispute at the frontier shall be submitted to two veterinary surgeons deputed by the interested Governments; should these not agree, then the experts will have recourse to arbitration.* To which was added: *It is desirable that the veterinary surgeons practising on the frontier shall possess the same rights in the two countries.*

Paragraph 11 was adopted. It runs: *Compensation for cattle slaughtered as affected with a contagious disease, and recently brought into the country, shall be charged to the country which imported them.* To which was added: *In the case of importation of animals affected with, or suspected of, contagious diseases, the sanitary measures in force in the importing countries shall be applied to them, in no case should they be crowded together.*

Paragraph 12 was adopted. It says: *It is necessary that the sanitary laws should be, as much as possible, identical in the different countries.*

Fourth Sitting, September 4th.

The subject of this meeting was that of compensation for slaughter. It gave rise to much discussion of a very interesting character. The two following propositions were adopted: *By right, the State ought not to give any indemnity for animals slaughtered because of being affected with a contagious disease, and it should only be given when the general interest and public hygiene are seriously menaced. There is no occasion to generalise the principle of compensation for slaughter; that is, to apply it to all the diseases under the cognisance of the Sanitary law.*

The conclusion of the report was subsequently discussed. Semmer, of Dorpat, stated that since the institution of a sanitary service in Russia, and compensation for slaughter had been allowed, Cattle Plague had rapidly diminished; there was reason to hope that it would soon be as rare in that country as it was in the West. Nocard's proposal, *that for Cattle Plague the diseased and contaminated animals should be slaughtered, and compensation given to the owners,* was adopted.

With regard to Pleuro-pneumonia, the discussion was reserved for the next meeting, but on the suggestion of Nocard, the following general formula was accepted: An equitable compensation should be given to owners of animals which are slaughtered because affected with, or suspected of, Cattle Plague, Pleuro-pneumonia, Tuberculosis, Glanders, or Horse Syphilis (Dourine).

The mode of payment of the compensation was next considered, and by a large majority the proposal of Nocard was adopted. *The compensation awarded in cases of slaughter shall be paid from a special fund provided for this purpose.*

The last conclusion in the report was unanimously adopted. *There is need to encourage as much as possible, and ask Governments themselves to encourage, by subventions, the creation of Mutual Insurance Companies, with the view: 1, of compensating the owners of animals which succumb to serious diseases or accidents; 2, to cover the loss incurred by the owner when the public action intervenes and destroys his animals because of contagious disease; 3, to give to the agricultural credit the greatest possible security with regard to the capital invested in cattle on which this credit should rest.*

FIFTH MEETING, SEPTEMBER 6TH.

The subject discussed was the "Prevention of Contagious Pleuro-pneumonia," which gave rise to much diversity of opinion. The following conclusions were ultimately adopted:—

1. *General slaughter of the diseased and contaminated animals is the sovereign remedy in extinguishing Pleuro-pneumonia, and this is the principle which should especially serve as a basis for legislation in the countries in which the malady has to be combated.*

2. *As an auxiliary measure, and a preliminary to general slaughter, precautionary inoculation may be carried out in infected districts where the disease is frequent, and where the bovine population is numerous and often renewed.*

4. *Inoculated animals should not be disposed of for any other purpose than slaughter.*

5. *Cowsheds in which diseased cattle have been, should not be again inhabited until they have been properly disinfected.*

The question of compensation was settled by the adoption of the following resolution: *It is indispensable that equitable compensation should be given to owners of cattle which have been slaughtered because of Pleuro-pneumonia, or which have died from the effects of legal inoculation.*

Another important conclusion was adopted: *In the interests of Sanitary Police, it is most important that the inspection of animals killed for food should be generalised and rendered obligatory.*

Another conclusion, which was also adopted, is as follows: *Animals suspected of being affected with Contagious Pleuro-pneumonia ought to be slaughtered for the same reason as those actually diseased.*

At the conclusion of this meeting, Professor Arloing stated the results of his researches for the microbe of this malady, which he had isolated and successfully inoculated. This has been already described in the VETERINARY JOURNAL.

SIXTH MEETING, SEPTEMBER 7TH.

The subject which occupied attention was the Inspection of Meat, the report on which was drawn up by MM. Baillet and Van Hertsen.

The following conclusions were finally adopted:—

1. *Meat should not be allowed to be sold as food until it has been pronounced healthy by the Veterinary Service.*

2. *Private slaughter-houses should be suppressed and replaced by public ones, which might serve, if need be, for several districts.*

3. *Veterinary inspection of the animals should be made before and after slaughter.*

4. *It is not necessary that a municipal order should define the cases in which meat should be seized.*

5. *The introduction of foreign meat should not be allowed without examination by the Veterinary Inspector, or under his control.*

6. *All meat should be marked before leaving the slaughter-house, including that intended for troops.*

7. *The inspection of meat in the army should be confided to military veterinary surgeons, or in default of them, in certain garrisons, to civilian veterinary surgeons.*

It was decided, with regard to a Veterinary Sanitary Service, that it should consist of:

1. *A veterinarian who should be with the Minister who deals with the veterinary sanitary police; he should be the inspector-general of the service.*

2. *Regional inspectors, who should be properly remunerated by the State, and not allowed to practise.*

3. *All veterinary surgeons should participate in carrying out sanitary police measures.*

This concluded the business of the Congress, and the time and place of the next meeting was then arranged. It was decided that the Congress should reassemble in five years. Several countries were mentioned, but ultimately it was agreed that Switzerland was the most convenient, and that there should be the meeting. The Congress therefore confided to the Swiss Veterinary Surgeons the task of organising its sixth gathering, in conjunction with the members *du bureau* of the present one.

The French Veterinary Surgeons gave a banquet in the evening to their foreign colleagues on the first floor of the Eiffel Tower, in the restaurant Alsace-et-Lorraine. Professor Chauveau was in the chair, supported on the right by Professor Nocard, and on the left by Dr. Fleming.

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

The Veterinary Mutual Defence Financial Statement, *From January 1st to December*, 1889.

Cash Received.

1889.	£	s.	d.
Balance in Bank, January 1st, 1889	438	2	5
Subscriptions in 1889	61	12	6
Bank Interest, June and December	8	5	4
	£508	0	3

Cash Paid.

1889.	£	s.	d.
Paid for use of room	0	5	6
Treasurer's account	2	5	8
Cash in Bank	501	2	9
Cash in hand	4	6	4
	£508	0	3

Audited and found correct,

January 13th, 1890.

JNO. B. WOLSTENHOLME.
T. GREAVES.

The National Veterinary Benevolent Financial Statement, *From January 1st to December*, 1889.

Cash Received.

1889.	£	s.	d.
Balance in Bank, Jan. 1st, 1889	395	1	5
Cash in Mersey Docks	1,900	0	0
Cash from Scottish Metropolitan Veterinary Medical Society	4	4	7
Sir Frederick Fitzwygram	3	0	0
Four Dividends from Mersey Docks	73	7	4
Bank Interest, June and December	7	7	4
	£2,383	0	8

Cash Paid.

1889.	£	s.	d.
Jan. 24, Cash paid Mrs. Rushall	5	0	0
April 20 ,, ,,	5	0	0
June 7 ,, Mrs. Freeman	5	0	0
July 23 ,, Brown's Children	5	0	0
Dec. 31, Cash in Bank	463	0	8
Cash in Mersey Docks	1,900	0	0
	£2,383	0	8

Audited and found correct,

January 13th, 1890.

JNO. B. WOLSTENHOLME.
T. GREAVES.

List of Subscriptions to the National Veterinary Benevolent and Mutual Defence Society, 1889.

1889.		£	s.	d.
Jan.	Wm. Carless	0	10	6
,,	R. C. Trigger	0	10	6
,,	E. Nuttall	0	10	6
,,	H. W. Caton	0	10	6
,,	J. B. Taylor	1	1	0
,,	R. Reynolds	0	10	6
,,	W. Whittle	0	10	6
,,	Professor Williams	0	10	6
,,	Hy. Thompson	1	1	0
Jan.	J. C. James	0	10	6
,,	John Freeman	0	10	6
,,	R. C. Edwards	0	10	6
,,	B. Cartledge	0	10	6
,,	F. G. Samson	0	10	6
,,	J. M. Axe	0	10	6
,,	J. D. Overed	0	10	6
,,	R. Cartwright	0	10	6
,,	F. F. Stanley	0	10	6

1889.		£	s.	d.
Jan.	G. Rugg	0	10	6
,,	H. J. Goodall	0	10	6
,,	W. H. Webb	0	10	6
,,	T. A. Dollar	0	10	6
,,	F. Dunn	1	1	0
,,	H. Hogben	0	10	6
,,	W. F. Peacock ...	0	10	6
,,	E. Faulkner	0	10	6
,,	T. Danby	0	10	6
,,	J. Rowe	0	10	6
,,	T. D. Chesterman ...	0	10	6
,,	T. Collins	0	10	6
,,	C. Morgan	0	10	6
,,	W. Roots	0	10	6
,,	T. E. Angers	0	10	6
,,	W. Woods	0	10	6
,,	H. Olver	0	10	6
,,	J. Storrar	0	10	6
,,	S. Locke	0	10	6
,,	J. H. Ferguson ...	0	10	6
,,	J. Bale	0	10	6
,,	G. A. A. Oliver ...	0	10	6
,,	Wm. Dobie	1	1	0
,,	T. Riddler	0	10	6
,,	J. Woodger	0	10	6
,,	T. Hopkins	1	1	0
,,	J. B. Wolstenholme ...	0	10	6
,,	T. D. Broad	0	10	6
,,	G. Ball and Son ...	1	1	0
,,	Batt and Son	1	1	0
,,	W. J. T. Bower ...	0	10	6
,,	Professor Walley ...	0	10	6
Feb.	F. Deighton	0	10	0
,,	T. Pratt	0	10	0
Feb.	E. Beddows	1	1	0
,,	W. Cawthorn	0	10	6
,,	H. Ferguson	1	1	0
,,	B. Russell	0	10	6
,,	J. W. Anderton ...	0	10	6
,,	T. W. Lambert ...	0	10	6
,,	Elam and Jackson ...	2	2	0
,,	T. Secker	0	10	6
Mar.	A. L. Gibson	0	10	6
,,	T. Aubrey	0	10	6
,,	E. H. Leach	1	1	0
,,	C. Moir...	0	10	0
,,	J. and A. Lawson ...	1	1	0
May	J. E. Scrivins	2	2	0
,,	J. S. Carter	0	10	6
,,	G. Schofield	3	3	0
June	W. Darwell	0	10	6
,,	J. R. Cox	0	10	6
,,	A. Olver	0	10	6
July	W. A. Field	1	11	6
Aug.	P. Taylor and Son ...	1	1	0
Nov.	Scottish Metropolitan V. M. A.	4	4	7
,,	T. Greaves	0	10	6
,,	C. Sheather	0	10	6
,,	O. J. Hill	0	10	6
,,	C. Moir	5	0	0
,,	Sir Frederick Fitzwygram	3	0	0
,,	G. H. Pyatt	1	1	0
Dec.	H. R. Perrins	1	11	6
,,	J. L. Barling	0	10	6
,,	G. Newsom	0	10	6
		£68	17	1

Audited and found correct,

January 13th, 1890.

JNO. B. WOLSTENHOLME.
T. GREAVES.

ROYAL COLLEGE OF VETERINARY SURGEONS.

LIST OF NAMES STRUCK OFF THE REGISTER.

THE following is a list of names of members removed from the Register through non-compliance with Section 5, Sub-section 4, of the Veterinary Surgeons Act, 1881:—

Abbot, Charles, late Manchester
Allan, Ralph, late Coldstream, Berwick
Allan, William, late Chesham, Bucks
Allen, J. G., late Ramsden-road, Balham
Allison, Jas. N., late Caermarthen
Anderson, Alex., late Glasgow
Anderson, G. R., late Middlesborough, Yorks
Ansell, W. M., late Featherstone-buildings, Limehouse
Archer, David, late Brecontree Heath, Essex
Arthur, Robert, late Monkland Iron Works, Hereford
Attwood, Alex., late Lower Duffryn, S. Wales
Baddeley, W. W., late Worcester
Bagg, Alderman C., late Blackheath
Bailey, Geo., late Shifnal, Salop.
Baker, Henry, late Halton, Cheshire
Baker, H. M., late Liverpool
Baldwin, Thos. C., late Bac'on, Norfolk
Balfour, Geo. H., M.D., late Edinburgh
Banister, A. E., late Bridport
Barclay, James, late Perth
Barker, John, late Bath
Barnes, Henry J., late West Perley, Liverpool

Barnett, John, late Plymouth
Barton, Robt. Jas., late Tunbridge Wells
Batchelor, A. H., late A.V.D.
Bicknell, Isaac, late Indian Army
Bartrum, W. H., late Waterloo-street, Brighton
Baty, Thos., late Stockton-on-Tees, Durham
Baxter, John, late Drymen, Stirlingshire
Bean, Nicholas, late Stockton-on-Tees, Durham
Bean, Parrington, late Stockton-on-Tees, Durham
Bell, R., late Winchester
Bennett, A. B., late Edinburgh
Bettison, J. E., late Newbury, Berks
Blakeley, John, late Belfast
Boden, Hesman, late Bermondsey
Borman, C. E., late Waltham, Lincolnshire
Borrowman, James, late Edinburgh
Briggs, John, late Coventry, Warwickshire
Broad, G., late Kentish Town, N.
Brown, J. H., late Lincoln
Bruce, Neville, late Islington, N.
Bunbury, T. B., late Piccadilly
Burbage, J. H., late Manchester
Burd, B., late Liverpool
Burnham, C., late Lincoln
Bushman, J. G., retired A.V.D.
Buxton, James, late Manchester
Buzzard, A. E., late Clay Cross, Derby
Campbell, A., late Birmingham
Capes, W., late Belvedere-road, Lambeth
Carless, J. R., late Whitechapel
Carlisle, W., late Wigton
Carmady, W. T., late Brompton-rd., S.W.
Carter, Frank L., late Manchester
Cattrall, J. G., late Burton-mews, Berkeley-square
Cave, Geo., late Liverpool
Chalmers, James, late Longton, Carlisle
Charles, J. W., late Accrington, Lancs.
Checketts, Benj., late Nantwich, Cheshire
Chisnall. W. G., late Liverpool
Chinn, W. J., late Gray's Inn-road
Clark, Andrew, late Ballantree, Ayrshire
Clark, John, late Auchenbowie, Stirling
Clarke, W. S., late Great Waltham, Essex
Clarkson, W., late A.V.D.
Constant, S. P., late A.V.D.
Cooper, James, late Manchester
Cooper, John, late Walsall, Staffs.
Cotterell, James, late Lowestoft, Suffolk
Crafts, H. M. L., late Fareham, Hants
Crawford, W., late Glasgow
Creswell, H. B., late Manchester
Crombie, James, late Dunfermline
Crosby, John J., late Whitby, Yorks
Cross, G. T., late Ipswich, Suffolk
Cullimore, J. M., retired Indian Army
Cunningham, Thos., late Dunedin, Otago, N.Z.
Day, F. W., late Tewkesbury
Day, Walter, late Weymouth
Dexter, Thos. P., late Chelsea, S.W.
Dickson, John, late West Graham-street, Glasgow
Dickson, Thos., late West Graham-street, Glasgow
Dobson, Robt., late Ticknall, Derby
Donaldson, John, senr., late Paisley, Renfrewshire
Douglas, John, late Denbigh, N. Wales
Dow, James, late Knightsbridge, S.W.
Draper, Henry, late Ilkeston, Derby
Easton, Alfred, late Chester
Eastwood, Frank, late Preston
Ebbetts, E. B., late Hemworth, Norfolk
Edgar, Thos., late Dunlop, Ayrshire
Edwards, Thos., late Wingham, Kent
Elford, Robt., late Calne, Wilts
Emms, C. W., late Sherborne, Dorsetshire
Emms, H. G., late Norwich
Evans, E. P., late Castleton, Cardiff
Farmer, James, late Upper Kennington-lane
Fawcett, Benj., late Morpeth, Northumberland
Field, A. V., late Huddersfield
Finlay, George D., late Belfast
Fitzgerald, James D., late Limerick
Flavell, G. F., late Finchley, N.
Fleming, Wm., late Fountain-bridge, Edinburgh
Flint, W., late Rotherham, Yorks
Forbes, Peter, late Kidderminster
France, John, late Birmingham
Francis, J. J. A., Smith-square, Chelsea
Furnivall, John G., late Bayswater, W.
Garnett, Geo., late Regent's Park-road
Gibson, Geo. Ed., late Hull, Yorks
Giffin, Thos., late Belfast
Gillingham, Geo., late Richmond, Surrey
Glass, Robt., late Glasgow
Gooch, C. A., late Indian Army
Goodwyn, R., late Ipswich, Suffolk
Gray, G., late Romford, Essex
Green, C. S., late Shirland-road, Paddington
Green, J. L., late Prestbury, Gloucester
Green, Thos., late Manchester
Gudgin, T. P., late A.V.D.
Hadfield, Thos., late Barnard Castle, Durham
Hall, H., late Spilsby, Lincolnshire
Harber, W. A., late Kidderminster
Hardy, J., late Holland-st., Blackfriars
Hare, J. B. A., late Deerpark, Cashel, Co. Tipperary
Harrison, T., late A.V.D.
Hausmann, J. P. W., late Hanover
Hawke, John A., late Cockermouth
Hay, G. W., late Boswell's-green, Roxburgh
Heatley, G. S., late Edinburgh
Hewlitt, Ebenezer, late Bellock, Fermanagh

Hill, Edwin, late Nottingham
Hill, John H., late Brecon
Hodgson, J. T., late Chingford
Hoey, J. P., retired Indian Army
Hogreve, H. junr., late A.V.D.
Holmes, P., late Birmingham
Home, James, retired A.V.D.
Howard, Thos., late Mitcham
Humphries, Geo., late Manchester
James, Wm., late Tilbury-rd., Brighton
Jeeves, James, late Scarborough
Jeffrey, Robert T., late Camberwell
Jennings, J. F., retired Indian Army
Johnston, Geo., late A.V.D.
Jones, A. J., late Eccles, Manchester
Jones, Thos., late Wrexham
Joss, John, late Aberdeen
Kay, Thos., late Ardwick-green, Manchester
Kershaw, Andrew, Spilsby, Lincolnshire
Kidney, George, late Belfast
Lamb, G. W., Shipton, Yorks
Langley, P. D., late Enfield
Lawrenson, James, late Croston
Leaney, A. G., late Whitehaven
Learoyd, Edward, late Edinburgh
Legge, John, late Isle of Islay
Lloyd, Thos. Edward, junr., late Chester
Loades, A. M., late Bishop Auckland, Durham
Llewellyn, W. H., late Regent-street, City-road
Lovegrove, Charles, Llanwddyn, N. Wales
McCaldon, late Croydon
McCauley, Thos. M., late Belfast
McHugh, John Thos., late Darwen, Lancs
Mackenzie, Andrew, late Glasgow
McKerrow, H., Lesmahagow, Lanark
Maclay, Thos., late Glasgow
McLaen, John, late Glasgow
McNaughton, J., late Langholme, Dumfries
Maguire, Robert John, late Pollockshields
Mann, Andrew, junr., Thornley, Durham
Marshall, Thos., late Coventry
Martin, C. H., late Kingsland-cres., E.
Martin, J. O., late Altrincham
Martin, W., late A.V.D.
Martin, W. E., late Beaminster, Dorset
Mason, Joseph, late Preston, Lancs
Mathews, Robt. W., late Drogheda
Mathewson, Geo., late Williamhope, Galashields
Maxon, John, late Canterbury
Miller, J. H., Stroud, Gloucestershire
Minikin, J. B., late Wexford, Ireland
Moffatt, G. D., late Edinburgh
Molyneux, Nathan, late Church-street, Blackpool
Moore, W. S., late Newcastle-on-Tyne
Moorey, Jas., late Burton-on-Trent, Staffordshire
Murray, W. C., late Portobello
Muir, Robertson, late Dublin
Neate, Chas. H. S., late Charing, near Ashford, Kent
Neeve, F. W., late Woodbridge, Suffolk
Norfolk, J. F., late Great Marlow, Bucks
O'Conner, Jos., late Dublin
Offer, Charles, Church-end, Willesden
Park, Robert, late Glasgow
Philip, Thos. W., late A.V.D.
Pickworth, H. W., Surbiton-hill, Surrey
Pile, John, Jersey
Pollock, G. H., late Bridgeton, Glasgow
Porteous, T. A., late Ferry-road, Leith, Edinburgh
Porter, Richd., Winchcombe, Gloucestershire
Pratt, Thos., late Bolton-row, Piccadilly
Pring, John, late Claverley, Bridgenorth, Salop
Ramsden, Samuel, late York
Redmond, W., late Witney, Oxfordshire
Redmond, W., late Charleston, U.S.A.
Reeke, G., late Lewisham-road, Surrey
Reid, Peter, late Falkirk, Stirlingshire
Riddell, Joseph, late Abergeldie, Aberdeen
Robertson, Andrew, late Glasgow
Robertson, Thos., Beaminster
Robinson, C. S., late Brentwood, Essex
Robinson, John A., late Westgate, Peterboro'
Rogers, W., late Whitechapel-road, E.
Rogerson, John, late Clitheroe, Lancs.
Roughsedge, W. H., Cooper's-hill, St. Helen's, Lancs.
Rush, W., late Thaxted
Rowland, J. G., late Sloane-st., Chelsea
Ryan, W., late Limerick
Scott, W., late Heath-st., Hampstead
Selfe, H. E. C., Blackman-street, Boro'
Shade, James, late Glasgow
Sheehy, J. T., late Limerick
Shenton, Robt., Ashburne, Derbyshire
Sherley, W. R., late Wimbledon-common
Sherwood, Thomas G., late Salisbury-street, Strand
Sim, Hugh, late Chepstow, Monmouth
Simpson, Wm., late Lancaster
Sinclair, David, St. Austell, Cornwall
Slack, James, late Guildford-street, W.C.
Smith, C. E., Hyde-street, Holborn
Smith, David, late Forteviot, Perthshire
Smith, F. A., late Louth, Lincoln
Smith, Gilbert, late Closeburn, Dumfries
Smith, John, late Yeovil
Smith, John, late Barrow-in-Furness
Smith, Kirtlan, late Louth, Lincoln
Sorby, Fredk., late Windsor
Sparrow, Geo. James, late Torquay
Spence, C. B., late W. Linton, Peeblesshire
Speering, J. Joseph, late Lichfield, Staff,
Spicer, W., late Lambourne, Berks.
Staveley, W., late Highbury, N.

Stevens, Alfred, late Brighton
Stevenson, M. J., late Dublin
Stewart, Robt., late Brompton, S.W.
Sullivan, W. J., late Cork
Sutton, Charles, late York
Tait, J., late Tweedmouth, Durham
Talbott, H. C., Blomfield-road, Maida-hill
Tate, J. N., late Sligo
Taylor, W., late Edinburgh
Taylor, W. E., late Market Harboro'
Teviotdale, John, late Elgin
Thompson, J. C., late City-road, N.
Thompson, J. C., late Londonderry
Thomson, Joseph, late Boroughbridge
Titterton, Charles, late Wimbledon, Surrey
Toll, W. P., late Burton-on-Trent, Staffs.
Turner, J. J., late Edinburgh
Tyrell, John, late Dublin
Turner, S. E., late Douglas, Isle of Man
Tweedley, H., late Paisley-road, Glasgow
Vyner, C. J., late Tufnell-park, N.
Wall, F. A., late Warrington
Wallis, W., late Charleston, U.S.A.
Watkins, W. R., late Brynmaury, Tredegar
Watlock, W., late Bath
Watson, Geo., late Loftus-in-Cleveland, Yorks
Watt, Alex., late Edinburgh
Western, Geo., late Indian Army
Webb, H. P., late Nuneaton, Warwick
Weighill, W. L., Marlow-road, Middlesboro'
Weir, Robert, Isle of Coll, Ayrshire
Whisken, E. C., Newton, Montgomeryshire
White, P. S., late Barnstaple
Whitecross, John W., late Edinburgh
Whyttock, Alex., late Perth
Wiggins, W., late Halton-road, Islington
Williams, J. J., late Camberwell
Williams, John, late Spitalfields
Wilmot, Robt., late Edinburgh
Woolner, E. H., Heywood, Manchester
Wilson, G., late Bank-house, Edinburgh
Wren, A. B., late Market-street, Stourbridge
Wright, F., late Streatham, S.W.
Wyer, W., late Stroud, Gloucestershire
Wyllie, G., late Slewoodfield, Aberdeen
Young, A. T., late Kingerby

Army Veterinary Department.

Gazette, December 20th, 1889.

HONORABLE ARTILLERY COMPANY OF LONDON.—Veterinary Surgeon (1st Class) E. Coleman retires into the Veteran Company, with permission to retain his rank and wear his uniform on retirement.

Gazette, December 24th, 1889.

W. D. Gunn, late Veterinary Surgeon, whose retirement, receiving a gratuity, was notified in the *Gazette* of 10th July, 1887, is restored to the Department as a Veterinary Surgeon, First Class, ranking as captain, and is absorbed in the vacancy in the establishment caused by the retirement on temporary half-pay of Veterinary Surgeon (First Class) W. Burt, dated 25th December, 1889.

Gazette, January 21st.

Veterinary Surgeon F. J. Short to be Veterinary Surgeon First-class (ranking as Captain). Dated January 24th.

Veterinary Surgeon Newsom has embarked for a tour of service in India.

By the death from influenza, in January, of Field-Marshal Lord Napier of Magdala, G.C.B., the Department has lost a valuable friend. On many occasions his good services to it were recognised, and he was ever ready to bear testimony to the excellent work it did, especially on active service. So recently as November 16th last, the Principal Veterinary Surgeon had occasion to write to his Lordship, invoking his support in favour of the claim of a veterinary officer, who had served under him during the Abyssinian Campaign in 1867. In reply, the following letter was sent by Lord Napier:

DEAR DR. FLEMING,—The service of the Veterinary Department in Abyssinia was a very arduous one, and all the officers of that Department, including Veterinary Surgeon —— rendered very important services. I

strongly support Mr. —— appeal. . . . . The Veterinary Department had to encounter a most destructive epidemic affecting the cavalry and transport horses and mules. But for the exertions of the Veterinary Officers, there would have been much more delay and inconvenience to the service than what was actually incurred. Believe me, yours very sincerely,

NAPIER OF MAGDALA.

We are very gratified to learn that the Khedive of Egypt has been pleased to confer the decoration of the Third Class of the Medijie on Veterinary Surgeon (First Class) M. F. M. Case, now Senior Veterinary Surgeon at Cairo, in recognition of his excellent services during the military operations at Suakim in 1888-89.

Obituary.

WE regret to notice the decease of Stephen Goodall, M.R.C.V.S., late of Leicester, who died on December 25th, aged forty-five years. He graduated in 1866.

Henry Bath, F.R.C.V.S., died on December 15th at Bradford-on-Avon. He graduated in 1851, and became a Foundation Fellow in 1877. He joined the Army during the Crimean War, but soon after it was over he was retired.

The following deaths have been reported: John Vick, M.R.C.V.S., Gloucester, a graduate of 1843; James Martin, M.R.C.V.S., Chesterfield, graduated 1859; and Thos. Darby, M.R.C.V.S., Louth, Lincolnshire, graduated 1844.

Our colleagues in Belgium, and indeed on the Continent generally, have sustained a heavy loss by the death of Dr. Wehenkel, Director of the Brussels Veterinary School, which took place on January 17th, at the comparatively early age of fifty years. The deceased was held in high esteem as a medical scientist, and his name is familiar to medical and veterinary readers as a large contributor to their literature. He was a Veterinary Surgeon and Doctor of Medicine, and, as has just been stated, he was Director of the State Veterinary School. He was, besides, Emeritus Honorary Professor in the University of Brussels, First Vice-President of the Belgian Royal Academy of Medicine, Titular Member of the Brussels Society of Medical and Natural Sciences; President of the Consultative Committee on Epizoöties; Member of the Superior Council of Hygiene; and an Honorary and Corresponding Member of many Belgian and Foreign Scientific Societies—he was an Honorary Associate of the R.C.V.S. For his services he was decorated a Chevalier of the Order of Leopold, Chevalier of the Order of the Oak Crown, and had the Civic Cross of the third class. He was Editor of the *Annales de Médecine Vétérinaire*, and among other works he published one on the Elements of Anatomy and Physiology, and translated Röll's treatise on Veterinary Medicine from German into French; he also did the same for Siedamgrotzky's and Hofmeister's excellent monograph on Chemical and Microscopical Analyses as applied to the diseases of animals. As a personal friend, we can bear testimony to his worth during many years' intimacy, and mourn with many others his untimely death from overwork.

Notes and News.

DOGS IN JOHANNESBURG, SOUTH AFRICA.—The dogs in Johannesburg are becoming such a nuisance that the Government have decided to impose a tax of 5s. on each dog. It is estimated that there are some 5,000 in that town and district.

PASTEUR AND RABIES.—How is it that Pasteur is not uniformly successful with his inoculations in Rabies? Sir Henry Roscoe considers the answer "simple and obvious." Pasteur's treatment is, he says, really a race between a strong and an attenuated virus. In cases in which the bite occurs near a nerve centre, the fatal malady may outstrip the treatment in this race between life and death. If the weakened virus can act in time it means life; if the strong virus act first prevention comes too late, and it means death.

VENTILATION IN THE BYRE.—The benefits of ample ventilation in the cow stables are varied. One is that the milk has less of the peculiar smell sometimes called animal odour, and of course the butter is improved. In addition, it is reported that a German dairy *savant* made the following valuable observations: They kept in an ordinary stable eighty Swiss cows, extraordinarily well fed and treated. In the years 1877 to 1879, prior to the introduction of a ventilation system, the same yielded, on an average per cow, 3,700 litres in 1877, same amount in 1878, and 3,716 litres in 1879. Subsequently to the introduced ventilation the amount of milk yielded, the food being the same, was as follows: in 1880, 4,050 litres milk per head; in 1881, 4,152; in 1882, 4,354 litres. A litre is nearly one quart.

REINS UNDER THE TAIL.—Horses given to switching their tails over the reins are a nuisance. Few drivers will dispute this fact, or forget how often they have been led to the very verge of profanity while engaged in the arduous work of extrication. A Yankee lady has just invented a simple remedy for use in such cases, and it has proved a marked success. It is merely to fasten near the lower corners of the dashboard in front and on each side an inverted hook. When the reins become "tail-fast" all the driver has to do is to slip them under one of these hooks and pull upwards, causing thus a downward pull on the other portion, which disengages it at once and without trouble.

DESTRUCTIVE FIRE.—The veterinary infirmary of Professor C. C. Lyford, in Minneapolis, Kansas, was burned recently, and with it five stallions, two of which were Colonel West and Blackmouth. They were valued at £10,000, and were not insured. The other three horses were at the infirmary to be treated.

THE FLYING OF A FLY.—A physiologist in France has been observing the working of flies in flying, and somehow has arrived at the conclusion that the wings of a fly make about 330 beats per second, and that such a fly can travel at the rate of a kilometre per minute. This, a French journal says, is equal to the velocity of an express train (37·3 miles). Assuming this to be so, then it says that a fly could compass the earth's circumference in twenty-eight days.

A DANGEROUS LARVA.—A dipterous larva bores the base of the top shoots of the juari (*Sorghum vulgare*), and is frequent in the Deccan; it is supposed to render the stalks poisonous to cattle, if eaten by them when semi-parched for want of rain. After a meal of young juari plants, tympany sets in, and death shortly after, in severe pain. This was well seen in 1877. The insect is called *bhaunri:* when rain falls it perishes. The insect resembles *Diatræa saccharalis*, the sugar-cane borer, which sets up putrefaction in the cane.

EASTERN NOTIONS OF TETANUS.—I was talking the other day to a very respectable and intelligent horse-dealer (Afghan), and on speaking of Tetanus I asked him to tell me what his people thought of the disease. He said they thought it was caused "by the wind," and that the seat of the disease was "the eye," and the remedy recommended was "to kill a young pigeon, and to bind up the eyes with a cloth in which the warm intestines were placed.'

This treatment does not appear to have been very successful, as, although he had had many cases amongst his own horses, and seen others, they "all died." —Extract from a letter received by the editors, *Q. J. V. Sc. in I.*

THE FAMOUS "ECLIPSE."—The following is an interesting note which we find in the *Gentleman's Magazine* for 1789: "Died at Canons, aged twenty-five, the noted horse Eclipse, who had made the fortune of his master, Count O'Kelly, and survived him about a twelvemonth. His heart weighed 13 lb., which enabled him to do what he did in speed and exercise. He won more matches, and covered more mares, than any horse of the race-breed was ever known to have done, and his skeleton is to be preserved. He was at last so worn out as to be unable to stand, and was conveyed, in a machine constructed for the purpose, from Epsom to Canons about midsummer last."

SHEPHERDS' KNOWLEDGE.—A shepherd has "a fund of information about his sheep; he can tell you the history of this or that ewe from the time that they were lambs. They know him, too, and they know his dog. They know that grey, old, weather-stained jacket or slop of his perfectly well; and if perchance they have broken bounds, they hearing his voice will show they know they have done wrong by making a guilty, precipitate retreat. But it is the coat chiefly by which they recognise him. They look with distrust on him when he dons a new coat, whilst they will tolerate a stranger who has a similar dirty grey one. The shepherd when he wants to catch a sheep for any purpose is careful to wear the old coat to which the flock is accustomed. Then, if he be in the habit of using the sheep quietly, he may almost walk over them, for they will hardly move at his approach. But let him only catch one, and all the rest are on the alert. They resent such liberties, and for a time are somewhat wary until confidence be restored."—*From John Darke's "Sojourn in the Cotteswolds."*

HORSES IN THE BRITISH ARMY.—The official returns of the number of horses and mules used in the British military service, just rendered to the War Office, show that there are now actually 24,400 animals at work for riding or draught purposes, exclusive of those belonging to officers, the total being about 1,200 below the number voted in the Army Estimates. Of the 24,400, 14,000 are borne upon the British establishment and 10,400 upon the Indian, both being below their proper numbers, though the British establishment much more closely approaches the numbers allowed than the Indian. The thirty-one cavalry regiments take the largest share of the animals, but their total is only 11,800 horses to mount 18,100 men, leaving about one-third of the troopers dismounted. The Royal Horse Artillery has of riding and draught horses 2,700, the Field Batteries 7,400, the Mountain Batteries 220 mules, and the Garrison Batteries about 100, the whole number of draught and riding horses and mules for the Artillery, including 22 Horse Batteries and 82 Field, being 10,500. The Army Service Corps has 1,300 horses, the Royal Engineers 400, and the Infantry Battalions 550, but these last figures, as well as the regimental transport animals, include the horses of the Mounted Infantry companies in Egypt and South Africa. The nine cavalry regiments in India absorb 4,300 of the 11,800, and of the remainder all are in the British Islands, with the exception of 350 with the Inniskilling Dragoons in Natal, and 500 with the 20h Hussars, Mounted Infantry in Egypt and South Africa. The 1,200 non-commissioned officers and men of the three Household Regiments have 800 horses between them, and the corps best provided with mounts is the 1st Dragoon Guards in Bengal, who have 500 horses for 600 men. The regiment showing the lowest horse strength is the Carabiniers, at Leeds and Birmingham, who have 250 for nearly double that strength in men.

Correspondence.

THE GENERAL USE OF ANÆSTHETICS.

SIR,—Will you allow me to call the attention of your readers to a subject which I think well worthy of consideration. I mean the advisability of administering chloroform to animals for those ordinary operations which, not falling under the head of veterinary practice, are looked on so entirely as matters of course, that, except occasionally in the case of full-grown horses, one never hears of anæsthesia in connection with them. I am well aware that, in veterinary practice, the use of chloroform is coming more and more into favour, and I know that, happily, those in the very highest position in the profession are its keen advocates.

The point I would urge is, that it should be adopted in the farm-yard, as well as by the veterinary profession.

That the most ordinary practices of the farm do cause sharp pain, is not denied by anyone; but the comparatively short time required for such operations, the trouble, cost, time, and the objection which the animals are supposed to have to chloroform, are all, at first, adduced as reasons for withholding the merciful anæsthetic.

Now, the first of these reasons is by no means a sufficient one. Who will deny that a few seconds of intense suffering seem protracted in an extraordinary degree? I have heard strong men honestly confess their aversion to undergoing the commonplace operation of the extraction of a tooth. Yet the ordinary farm operations are *less* quick, I understand, than the process of tooth-drawing, and must be incomparably more severe. Why, then, should we, on this ground, withhold chloroform, bearing in mind at the same time that all shocks of pain are admittedly injurious to the subject? more or less so, of course, in proportion to their duration.

As to the other objections, viz., the time, trouble, cost, and resistance of the animals to the anæsthetic, I am in a position to assert, positively, that these exist more in imagination than reality, as I have proved by personal experiment.

The expenditure of time and trouble is exceedingly trifling if the matter is managed systematically, and by two or three persons simultaneously, each performing his allotted portion of the work. As to the dislike of the creatures themselves to the chloroform, a little experience will quickly show that this is no objection whatever in reality, and that many animals appear rather to enjoy it than otherwise.

It is also certain, that on the manner in which it is administered depends their taking it calmly, or the reverse.

For full particulars as to this, I beg to refer any who may be interested in the subject, to a small pamphlet lately published, entitled, "Chloroform for Farm Stock," in which will be found an accurate account of various experiments recently tried with signal success by myself and friends.

This paper, which is just going through a second edition, and which contains, besides the details alluded to, much valuable information reprinted, by kind permission, from the writings of Mr. John Moore, of Manchester, M.R.C.V.S., I shall have pleasure in forwarding, gratis, to any one who will communicate with me by post-card.

It is enough here to state that, roughly speaking, lambs may be put under chloroform at a cost of about one farthing and a-half per head, and calves

at that of about one penny. I have been most helpfully met in the matter by Messrs. Duncan and Flockhart, the great chloroform manufacturers of Edinburgh, who have arranged to supply the principal wholesale and retail chemists throughout Scotland, with methylated chloroform, which is perfectly suitable for these purposes, at such a price as will enable them to supply customers with the anæsthetic in any quantity, at a cost of 2s. 2d. per lb. This arrangement Messrs. D. and F. would probably be willing to extend, so that it might apply to all chemists throughout the United Kingdom, should sufficient demand for chloroform arise. They will also at any time supply it direct to purchasers themselves, but in this case 50 lbs. must be taken, probably a larger quantity than would be required, unless by a society banded together for the purpose. The purchasers would require to pay carriage, but this could not amount to any considerable sum; and the stoppered bottles, which are a necessity for chloroform, and of some value, would be allowed for, if returned intact. It is worth noting that for this 50 lbs. of chloroform, representing an outlay of £5 8s. 4d., and carriage expenses extra, we could anæsthetise four thousand lambs of a month or six weeks of age, or about one thousand three hundred calves of same age, or about two hundred and sixty full-grown horses or beasts. I am well within the mark in stating this.

To return. I feel convinced that no one who makes trial of this system will fail to perceive its immense advantages. Not only is suffering avoided, but from the profound stillness produced any operation can be performed with infinitely greater precision, while risk of injury to the animal is altogether removed.

Besides this, as was well remarked by the practitioner who assisted me in my experiments, the animal is entirely saved from the exhaustion resulting from struggling. It is well known that, under ordinary circumstances, most animals suffer a certain degree of depression after these operations; when chloroform is employed it is not so. The animals do not recover consciousness until the work is concluded, and the wounds carefully dressed with a comforting mixture, when they arouse as if nothing had occurred, and never show any signs of disturbance; and this is the case not with the lambs alone, but also with large calves of some months old.

Among all the animals treated in this manner, comprising over 200 lambs and about a dozen calves, there was not a single case of inflammation, nor of the formation of abscess; the healing proceeded uninterruptedly and without drawback.

Besides these operations, there exists the question of dishorning, which has lately caused so much discussion, and which is not yet settled. Now this is admittedly a practice involving intense pain, and if it cannot be dispensed with, surely no one whose attention has once been drawn to the subject of chloroform would hesitate to make use of it for this cruel operation, the means of avoiding the suffering being so easily attainable.

Even a large animal, a horse, for example, can be rendered insensible at a cost of about 2d. or 3d., therefore the expense could be no valid objection; and although it is true that a large creature must be thrown before an anæsthetic can be satisfactorily administered, yet the trouble of throwing will be more than repaid by having the animal rendered safely unconscious, and thus incapable of injuring either itself or others; and by having it at the same time in so perfectly inanimate a condition that the operation can be performed with perfect exactitude, and without the aid of any forcible restraint.

The extreme tip of the horn is, I am told, devoid of sensation, but if the removal of this is considered insufficient, and it is thought necessary to remove the horns from the part where sensation does exist, surely the use of chloroform is imperatively demanded by the most ordinary considerations of

humanity, and, in my opinion, also of self-interest; for the question before alluded to of shock to the system, resulting from suffering, and probable consequent deterioration of the animals, is certainly well worth consideration; and it is my firm belief that an extended use of chloroform in all operations involving pain, would speedily prove beyond a doubt that the less animals suffer the more uninterruptedly they thrive.

Let us save them from suffering, and we shall most surely ourselves be the gainers, both directly and indirectly.

In making these assertions and urging this cause I have said no more than my experience in these matters, limited as yet, fully warrants me in saying. I have been careful to overstate nothing, and feel confident that a fair trial will simply corroborate all I have ventured to assert. I believe that the unnecessary pain which is inflicted on animals is greatly the result not of cruelty, but of the callousness bred of custom. We think such things are inevitable, and so dismiss the subject from our minds. Possibly the practices are inevitable, but with chloroform at our command suffering to the helpless animals which are at our mercy is not so. Surely by blindly persisting in running in our old groove we become guilty not only of cruelty, but of stupidity. Why should we not put ourselves, in imagination, in the situation of the animals? I am convinced if we did so we should all vote for chloroform, and, moreover, that we should soon find out how great a benefit we were conferring, not on the creatures alone, but on ourselves, their owners.

Begging you to excuse so long a letter.

Seaton House, Arbroath, Scotland, *Jan. 19th.* K. BRUCE.

[We commend this excellent letter to the careful attention of our readers. The prevention and the alleviation of pain in animals is a sacred duty imposed on mankind, but in a special degree on members of the veterinary profession. We can do much to influence laymen in this direction, and the strong appeal of our humane correspondent reminds us of the position we occupy with regard to the prevention of suffering in animals.—EDITOR, *V. J.*]

TUBERCULOSIS IN THE UNITED STATES OF AMERICA.

DEAR SIR,—I have just received the December number of your valuable journal, and have read with astonishment the statement made by Mr. Liautard, of New York, at the International Veterinary Congress, in regard to the prevalence of Tuberculosis among the cattle of the United States. He is reported as saying that "it might be affirmed that 25 to 50 per cent. were affected," etc.

Having been live stock importer for British steamships at this port for the past ten years, I have yearly examined from 20,000 to 50,000 head of cattle of all kinds, also several cargoes from New York, and many from Portland, Maine. My duties in this connection have been also to keep a strict watch of reported outbreaks of cattle disease in this and adjoining States, and pay frequent visits to the stock-yards and abattoirs. From such an experience with our cattle traffic and live stock interests, I am decidedly of the opinion that his statement *grossly exaggerates* the matter, and in this I am endorsed by others. Dr. Burr (a graduate of Harvard Veterinary Department, who was for two seasons my assistant, and is at present Dead Meat Inspector at the abattoir for our Board of Health) informed me yesterday, that since October 1st he had found only six (6) cases of Tuberculosis. The average number of cattle slaughtered during this time cannot be far from 800 or 1,000 per week. Dr. Burr is a very careful, reliable young man, and his statement can be depended on as being very nearly correct. Of course there is a class of animals that are not sent to the abattoir for slaughter for fear of confiscation, but are

killed at private slaughter-houses outside of city limits. Among these there is probably a much larger percentage tuberculous; but that *even among our cows* there can be anything like "25 to 50 per cent. tuberculous," is, in my opinion, preposterous nonsense; and that from 5 to 10 per cent. of those killed outside the regular abattoirs, would be an estimate much nearer the mark, and sufficiently large to occasion a great deal of alarm.

It is very much to be regretted that such reckless statements should have been made in such an assemblage. It is unjust to our live stock interests, and embarrassing to your steamship lines engaged in a traffic that has already suffered very much from the sanitary and other restrictions imposed by foreign governments. It is also humiliating to the profession in this country that one whom many may have supposed was their representative, should have made such an exhibition of his knowledge among scientific men, whose cautious statements stand out in such contrast.

Hoping you may think this of sufficient interest to publish,

WILLIAMSON BRYDEN.

Boston, U.S.A., *Dec. 15th*, 1889.

THE OPERATION FOR ROARING, AND MISREPRESENTATION OF FACTS CONNECTED THEREWITH.

SIR,—It appears to me that several facts have been greatly misrepresented in the reports, editorials, etc., which have lately appeared on the subject for public opinion. I may point out only a few of these, because they require to be rightly examined before any one is in a position to come to a conclusion regarding their value.

In the first place, I was very much struck by reading two very contradictory editorials which have appeared in professional journals, on the results of only three operations performed under the directions of the Midland Counties Veterinary Medical Association. In the one (*Veterinary Record*, 28th December, 1889) we are told that the cases chosen for operation were horses making "a slight noise" only; and in another (*Journ. of Comp. Pathol. and Therapeutics*, December, 1889), that all three animals "continued to be pronounced roarers." As no state can continue unless it was there before, and since the continued state is termed "pronounced," we naturally presume the original state of these animals must also have been pronounced. But the editor of the *Veterinary Record* (*vide supra*) has told us that they made only "a slight noise." Is this not a false representation of facts? And yet these men, so ill-informed, and whose knowledge extends to the results of three or four cases, have called upon Dr. Fleming (Principal Veterinary Surgeon of the Army, who introduced the operation, at least in this country) to show better results from larger statistics. And I have no doubt Dr. Fleming will very easily do that in a short time.

Then some men, jealous of the reputation Dr. Fleming has deservedly gained in the profession, have tried to show, from the very facts offered them by Dr. Fleming, that the first men to operate on the larynx of the horse were Gunther and Stockfleth, and afterwards Möller. No one denies this, but Dr. Fleming's operation is different from each of these. I would advise those who are not acquainted with the history of the operation, to read Dr. Fleming's work on "Laryngismus Paralyticus, or Roaring," published by Messrs. Baillière, Tindall, and Cox.

Under Dr. Möller's care, a large majority of the cases appears to have been "benefited," or, as we term it, relieved, shortly after his operation; and a still larger percentage showed this benefit after Dr. Fleming's operation. "No one knows what has been the ultimate fate of the cases" which showed

"benefit" under Dr. Möller's care at the Berlin Veterinary College; and opponents of Dr. Fleming's operation, who are trying to crush British success under a pretence of lauding that obtained in Germany, call upon Dr. Fleming to show the statistics of such of his cases as have suffered from after complications attendant on almost every operation, for their own criticisms. This, to say the least, is downright opposition to progress in any branch of surgery, and most discouraging to any one interested in the advancement of his profession.

The opponents of Dr. Fleming's operation expect us to show a percentage of recoveries equal to that obtained in the hands of specialists, such as I consider Sir Spencer Wells and Mr. Lawson Tait, in Ovarian Disease; or Reginald Harrison in Urino-Genital Disease, and so on. But they forget that the operation for Roaring has been practised hardly two years in England, and many of the operations have been performed by executive officers. And what is a specialist? A man who devotes his whole attention to the study of a particular subject. And yet Lawson Tait himself did not achieve that success in his earlier experience which he does now. It is not expected of him, nor of any other man, to do otherwise. There was a time when a feeling of animus was so strong against Mr. Tait, and is so even now, I believe, that medical students of Birmingham, going up for their examinations in London, were afraid to admit before their examiners that they came from that city.

The question is, Does the operation of Dr. Fleming, in cases of Roaring in horses, do any good or not? And if it does, if it relieves even one case out of a hundred, why should it be discarded? Will the opponents of the operation answer this question first, before they raise their voices against it? I have not taken part in the operation myself, but judging from the registers, etc., in my possession, I see that nearly every case operated on was discharged relieved; and of two of these cases which came under my charge lately, one showed no symptoms of Roaring I could detect, and was cured, while the other was admitted to have been "improved" by more than one officer who had seen the animal before the operation.

The opponents of Dr. Fleming's operation think we have not attained the success noted in Germany; we cannot compliment them on the success attending Professor Axe's operation on three horses, chosen by the Midland Counties Veterinary Medical Association, if the operator is described as "no novice" at his work.

Further endeavours are being made to convince the uninformed, that all the army horses operated on for the removal of Roaring have been under the immediate care of Dr. Fleming. Now, this is a mis-statement, for nearly one-half of the horses (as, for example, those in Ireland) Dr. Fleming never saw, as these animals were under the treatment of executive officers.

The whole case is lamentable, as indicating a want of accurate knowledge of the facts on the part of those who give their opinions in professional journals and elsewhere, upon such a weak basis, and as showing that great difficulties lie in the way of those who wish to promote the interests of their profession by contributing to its literature and in other ways; for, I take it, there is no one who has yet done a hundredth part of the work Dr. Fleming has towards the advancement of the veterinary profession in England. Such professional ill-feeling as exists between its members would be tolerated in no other country. And the veterinary profession of England can hope for little advance, indeed, if they do not show more professional good-feeling, and work more in harmony, than they have done in the present instance.

R. W. Burke, F.R.C.V.S., A.V.D.

January 4th, 1890.

CENTENARY OF THE ROYAL VETERINARY COLLEGE.

SIR,—During a visit to the R.V.C. this week, I casually caught sight of the following inscription on the coping stone of the wall within the College yard—'Founded 1791,' and immediately came the thought—Why, next year will be the centenary of the College. I asked the worthy Resident Professor if it would not be well to recognise the event, a suggestion he acquiesced in. Surely the date upon which the hundredth anniversary of our College falls should be commemorated, and right well commemorated—whether in the form of a Grand International Congress, followed by a soiree and banquet, or in some other way that would bring well to the public mind the claims and scientific position of a profession, now second to none.

With this brief, but none too early allusion to the approaching centenary of the R.V.C., I leave the matter for the digestion of the profession at large.

WOODROFFE HILL, F.R.C.V.S.

Jan. 9th, 1890.

THE MEDICAL PROFESSION OF ENGLAND AGAINST VETERINARY WORK.

SIR,—I wish to ask a few questions through the medium of your journal, which some one may be able to answer, or perhaps you will express an opinion on them.

1. Why is it that the medical profession in England absorbs so much and admits so little, in matters relating to veterinary work?

2. Until Fleming's pamphlet on Actinomykosis was published, the *name* of the disease was not known in England, and yet we find medical men now writing "histories" upon the disease, in which the name of a veterinary authority is hardly mentioned. And very many there are who to-day try to claim that the cause of the malady was revealed through medical agency, if not in England, at least on the Continent. Some say the discoverer was Dr. Rivolta; and who was Dr. Rivolta but a veterinarian? As a matter of fact, even here the medical profession err; for, as Professor Boschetti, of the Turin Veterinary School, some time ago told me, it was *not* Rivolta, but Perroncito who first found the *actinomyces*. I enclose you a pamphlet on the subject I have lately received from Professor Perroncito, of the Turin Veterinary School, in which the matter is clearly explained.

3. Again, regarding the contagiousness of Tuberculosis, who was it that first declared, in England, this disease to be truly contagious in every sense of the word, but Dr. Fleming, Principal Veterinary Surgeon of the Army, when medical men paid no heed to the question? And now they are giving "lectures," and writing "treatises" on the subject, without even mentioning a veterinary writer's name, except in such a way that it can be made to stand for a Tom, Dick, or Harry of any profession. Is it that they are afraid to acknowledge veterinary work? Or do they think themselves something above the medical profession on the Continent?

And similarly with the cultivation of the *bacillus tuberculosis*, and many other questions.

The medical profession of England has a distinguishing title of "Doctor" for those who have obtained the M.D. degree, and a "Mr." simply, for surgeons and others. Perhaps they have been favourably inclined when they have included us among the latter, without saying that the Mr. was a veterinary surgeon. Nevertheless, acknowledging their good-will towards us, I

think we would still prefer to be spoken of simply as veterinary surgeons, whenever they have occasion to speak of any one in our profession, whether we have any additional degrees or not.

Although there are reasons for concluding that human pathology is related to that of animals, and we know that general or comparative pathology has only begun to be recognised as a science in England, we can only be surprised that we have been so slow to realise the fact that pathology must advance as well as all other sciences have advanced, viz., by *comparison*, and that even in these days the idea is not more extensively grasped and more completely worked out.

A CONSTANT READER.

MELBOURNE VETERINARY COLLEGE.

DEAR SIR,—Will you be good enough to give me the address of the Veterinary College in Melbourne?

Do you think if one got the diploma of that College, would it entitle you to use the letters M.R.C.V.S.?

Kilkenny. T. F. RENEHAN.

[The Principal, Veterinary College, Melbourne, Victoria, is the address if our correspondent desires to write for information. The diploma of that institution cannot confer the title of M.R.C.V.S.—ED. *V. J.*]

LANCASHIRE VETERINARY ASSOCIATION.

WE are asked to state that the Annual Meeting and Dinner of the above Association will take place on Friday, February 28th, at the Victoria Hotel, Manchester.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from W. Brydon, Boston, U.S.A.; J. A. Nunn, A.V.D., India; A. Leather, Liverpool; R. W. Burke. A.V.D., Athlone; J. J. Duncan, M.D., Toronto; L. York, Toronto; A W. Hill, London; R. Rutherford, Edinburgh; E. E. Bennett, A.V.D., Newcastle-on-Tyne; J. Mills, A.V.D.; Chatham; "A Constant Reader;" K. Bruce, Arbroath; J. W. Hill, London; H. Kidd, Hungerford; T. F. Renehan, Kilkenny; T. B. Goodall, Christchurch; R. Ward, Baltimore, U.S.A.; Professor Smith, Toronto; J. Cooke, Scarborough; A. Wenborne, Buffalo, N.Y.; F. L. Gooch, Stamford; M. Wehenkel, Brussels; P. Pike, Manchester.

BOOKS AND PAMPHLETS: Transactions of the Pathological Society of London; Bulletin et Mémoires de la Société Centrale de Médecine Vétérinaire; Bulletin des Séances de la Société Nationale d'Agriculture de France; *Reuter*, Die Staupe der Hunde; *Von Wrangel*, Training des Pferdes; Comptes Rendus des Travaux Speciaux de l'Institut Vétérinaire, Charkow.

JOURNALS, ETC.: *Journal of the National Agricultural Society of Victoria; Revue Hippique; Journal of Comparative Medicine and Surgery; Proces Verbal de la Académie Royale de Médecine de Belgique; Agricultural Journal; Revue Vétérinaire; Annales de Méd. Vétérinaire; Lancet; British Medical Journal; Thierarzt; Horse World; Archiv für Wissenschaftliche und Praktische Thierheilkunde; Repertorium der Thierheilkunde; Live Stock Journal; Recueil de Medecine Vétérinaire; Mark Lane Express; Journal de Med. Veterinaire et de Zootechnie; Clinica Veterinaria; London Medical Recorder; Edinburgh Medical Journal; Hufschmied; American Veterinary Review; Deutsche Zeitschrift fur Thiermedicin und Vergleichende Pathologie.*

NEWSPAPERS: *Dundee Advertiser; Glasgow Herald; Edinburgh Evening News; Baltimore Weekly Sun* (3 copies).